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ABSTRACT

This package contains the student materials for five modules which comprise a portion of the National Training and Development Service Urban Management Curriculum Development Project. These modules focus on the distribution of services in urban areas. Module One presents chapters on service distribution and equity, effectiveness, decision making, methodology, legal and political issues, and management strategies. The four following modules focus on specific areas: solid waste collection, library services, park services, and police. Each module introduces the concept of equity in service distribution and presents chapters on decision making, analysis methodology, geographic analysis, and management strategies. (MK)

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EQUITY AND URBAN SERVICE DISTRIBUTION

Module 1

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and accountability. In the remainder of this introduction, we will look briefly at the content of each chapter and give further consideration to why administrators, elected officials, and citizens should be concerned about whether service distribution is equitable.

Conceptions of Equity

Every service distribution pattern reflects a conception of equity. The conception of equity may be unarticulated. Nevertheless, it will be manifested in decision rules, in routine procedures for distributing services. In interviewing local government officials, we have found that two conceptions of equity were most frequently mentioned. The first is that everyone should receive equal services. The second is that local officials should respond to demands. When the questioning probed behind these general responses, a number of interesting complications became apparent. In many instances, equal service distribution per capita is a vague goal, often inappropriate, frequently modified by circumstances, rather than an operating procedure. In some instances, services explicitly are distributed unequally per capita, even when administrators' top-of-the-head response is that equal per capita service distribution is the department's operating norm. In some instances, equal service distribution is proclaimed, though in fact administrators do not know whether services are equally distributed.

At times, inconsistencies between distributing services equally per capita and responding to demands were not recognized by administrators we interviewed. If recognized, sometimes no way was found to overcome inconsistencies. For example, in Fairfax County, Virginia, requests for parks from each of eight districts in the county are accommodated without regard to relative need among districts. However, most projects within each district are selected based on moving toward a standard of at least 8.5 acres of community parks per 1,000 people. The justification is that each of these eight districts must get a relatively equal share of each bond issue in order to maximize the chances for voter approval. In Atlanta, one impediment to implementing the goal of equal park service in every neighborhood, according to park administrators, is that residents of developed neighborhoods usually resist having new parks located nearby. That is, residents demand that new parks not be located where doing so would tend to equalize park distribution.[1]

Need is a third conception of equity that commonly is used for certain services. The argument is that as needs vary, services also should vary. For example, police patrol manpower often is distributed according to some criterion of need (crime rates). Sometimes, variation in street cleanliness is used as a basis for varying frequency of street cleaning service. In each instance, the conditions the service is intended to improve are used as indicators of need for the service.

Preference represents a fourth conception of equity. This notion of equity assumes that consumer preferences should determine the quantity and quality of services that local governments provide. Preferences differ from demands in that they include unarticulated demands as well as those that are expressed. Unarticulated demands must be elicited. The information costs therefore are high. This makes preference less practical and less used as a conception of equity than equality, need, and demand.

CHAPTER 1. THE PARADOX OF URBAN SERVICE DISTRIBUTION: THE ROUTINE AND THE MYSTERIOUS

The provision of most local public services involves a paradox. Most services are routine. Nearly everyone is familiar with them — police, fire, refuse collection, water, parks, recreation, libraries, sewage disposal, bus service. Yet little is known— by citizens, by elected officials, even by administrators and planners— about who gets how much of them. Deciding who gets what is the essence of politics. The provision of services to people is the essence of administration. But administrators rarely systematically analyze who gets how much of the services they distribute. Instead, they use decision rules that seem reasonable to routinize service distribution. These rules emerge from professional standards, from history and custom, from the pursuit of efficiency, from aspirations for effectiveness. What are the consequences of these decision rules? Who benefits from the services, taken singly and cumulatively, that are distributed routinely in urban areas? Is this service distribution pattern fair? Is it equitable?

Once the issue shifts to equity and away from routine service distribution, the seemingly familiar gives way to the obviously mysterious. Who, after all, is to determine what is equitable? Since equity involves individual value judgments, it is an essentially political question. Therefore, shouldn't issues of equity be decided by elected officials and shouldn't these issues be debated and fought over during election campaigns? Though equity may involve individual values and politics and be the appropriate province of elected officials, the tendency seems to be that service distribution decisions are dominated by administrators. Not only are these value-laden issues dominated by administrators, but it is the specialist administrators— the police chief, the sanitation commissioner, the parks director, the library director, the fire chief, the highway engineer, the water system manager— and not the generalist administrators— city managers, mayors, chief administrative officers, planning directors, budget directors— who more often than not are preeminent in making service distribution decisions.

What are the alternatives administrators should consider in deciding whether a service distribution pattern is equitable? What are the main conceptions of equity? How are decision rules related to service distribution patterns? How should service distribution be measured and analyzed? What difference does methodology make in enhancing judgments about what is equitable? In addition to trying to decide what is equitable, shouldn't administrators and elected officials at least know what is constitutional?

These are some of the questions that are examined in this book. The objective of our discussion of these questions is an attempt to make equity a concept that administrators and other local officials can use in practicing their craft, just as they use the concepts of efficiency, effectiveness, water pressure, three minute fire response time in one district and ten minute response time in another district, and no one exceeding an acceptable distance from parks in one neighborhood and 50 percent of the residents exceeding that distance in another neighborhood.

Effectiveness in resource utilization cannot be achieved unless there are service goals. Goals involve notions of equity. What should be done and how requires that decisions be made about who will benefit. What are the goals of the police department? Should crime rates be equal in all parts of the city? Should resources be distributed so that every citizen has an equal chance of being the victim of a crime? Should more patrol manpower be assigned to high need neighborhoods?

Is it the goal of the solid waste department to pick up the garbage twice a week from every residence regardless of the expense and effort involved or is the goal the equalization of input of resources across neighborhoods, clean streets and sidewalks, satisfied citizens, or reduced health hazards?

Geographic distribution is an integral part of service effectiveness. Administrators should analyze service distribution as a basis for estimating effectiveness and to provide a basis for making judgments about service equity. Methods for analyzing service distribution are presented in Chapter 4. Several examples are provided to assist public officials in using distributional data to make policy changes and to assess the extent to which a particular pattern of service distribution is equitable.

The essence of the methodology proposed is that multiple indicators of service distribution should be used. A framework should be used that encourages attention to the entire service delivery process. The framework proposed here uses four categories to analyze service distribution. These categories are resources, activities, results, and impacts. The first three categories have the greatest usefulness. Impact indicators are more interesting to social scientists than to government officials, because analysis of impacts requires more time, money, and controlled conditions than administrators are able to command. Often the analysis of service distribution has relied upon resource indicators— expenditures and personnel in particular. In Chapter 4, the argument is made that indicators of service activities and results also should be stressed. In fact, service analysis that depends upon resource indicators may be seriously misleading.

The Political Dimensions of Service Distribution

The close interaction between politics and administration is apparent when service distribution decision-making is analyzed. Elected officials share in some of the major decisions— budget decisions primarily. They also participate in some details— primarily responding to constituents' complaints about services. However, administrators dominate the heart of distributional decision-making. They determine most of the decision rules by which services will be routinely distributed. Still, it is accurate to say that service distribution decisions tend to evolve and drift rather than to be confronted and debated. Why?

The fifth conception of equity is that willingness-to-pay should determine service distribution. Choice is regarded as the best guide to preference and choices are thought to be most meaningful when services are paid for directly. User charges and special assessment financing implement the willingness-to-pay concept of equity. Since willingness-to-pay is related to ability to pay, the implication for service distribution is that relatively well-off persons are likely to obtain more of the service provided in this way.

These equity concepts are examined in Chapter 2. We indicate a number of problems associated with each conception of equity and discuss the consequences for service distribution of relying upon one standard of equity rather than another.

Conceptions of equity are implemented, explicitly or implicitly, through decision rules. Decision rules are rules-of-thumb, routine procedures, customary practices that determine how most operating and capital expenditures are made. Decision rules have consequences for the distribution patterns for each service. The role and findings about the consequences of decision rules are discussed in Chapter 3. In this chapter, we suggest how the use of technical-rational criteria in municipal departments can have adverse consequences for certain groups. Although there may be no intent to discriminate on the basis of race and wealth, reliance on decision rules to guide distributional policy and to resolve distributional issues may ensure that some neighborhoods receive higher service levels than others. A few examples will indicate the effects that decision rules have.

In Atlanta, the decision rule used in determining street cleaning schedules is that every residential street should be swept once in two weeks or once in three weeks, based on a one-time evaluation made more than a year earlier. In Richmond, Virginia, the decision rule is: Vary street cleaning frequency from once a week to once every three months, depending on how dirty the streets are based on periodic evaluations of street cleanliness.

In allocating police personnel, patrolmen commonly are distributed in proportion to calls for service. In earlier periods (and still in some places today), the decision rule has been to assign the same number of patrolmen to each patrol district, regardless of the number of calls for service.

Service Effectiveness

Administrators should evaluate services in terms of their achievement of service objectives. Varying degrees of achievement of service objectives suggest whether services are more, or less, effective. Judgments about service effectiveness should be made cautiously, because conditions often are influenced by events other than those involving the service itself. But one aspect of assessing service effectiveness is clear. It is not adequate to determine community-wide arrest rates, library circulation rates, street cleanliness conditions, mean water pressure at the tap, response time to fires, and the number of residences more than an acceptable distance from a park. It is not acceptable to have variation among service districts of: 10 percent to 70 percent for arrest rates for burglaries, library circulation of one book per capita per year to twenty books per capita year, some neighborhoods with clean streets and others with dirty streets, a three-to-one variation in

One reason is that decision-makers usually do not have an adequate description of how any service is distributed. Systematic analysis, such as that proposed here, rarely is conducted. Deficiencies in information and analysis inhibit administrators and elected officials from thinking carefully about the consequences of distributional decisions.

A second reason concerns the function of decision rules. Decision rules are intended to reduce controversy and enshrine routine. They are designed to replace "politics" with "administration." Decision rules evolve from the history of the organization, the preferences of individual administrators, and, sometimes, the influence of national professional organizations and state or federal government agencies. The objective of these decision rules is likely to be efficiency or effectiveness. The distributional implications of the decision rules may not be stressed. Equity issues may not be explicitly considered.

A third reason for drift in distributional decision-making is that generalist administrators, such as mayors, city managers, budget directors, and planners, tend to be left out, even locked out, of many decisions about service distribution that are made in operating departments. The shortage of managers' time in relation to demands for their time accounts for part of their abstinence from making service distribution decisions. Expectations by generalists about specialists' expertise accounts for another portion of departmental autonomy. In Atlanta, for example, the chief administrative officer, to whom nearly all department heads reported, said that distribution "decisions are up to the department heads. They're experts; that's why they are hired. If I knew enough to make those decisions, then I wouldn't need them." He abstained from distributional decisions because a) he lacked expertise, b) he was engaged primarily in crisis management, and c) service distribution crises had not occurred during his tenure. But even given the will and a set of norms encouraging generalist managers, planners, and elected officials to participate in distributional decisions, they still will be locked out of many decisions unless they have access to information about service distribution and unless they can identify the decision rules employed and make inferences about the distributional effects of these rules. Newcomers, whether elected or appointed, will have a particularly difficult time. Gross service disparities may be perpetuated without executives being aware of them. A few years ago, the Mayor of Syracuse was surprised to learn that refuse was collected at most residences at the curb, but that in some neighborhoods, refuse collections were made at the side of residences. Consequently, refuse collection involved greater effort and inconvenience for some citizens than for others. During a fiscal crisis, refuse collection locations were equalized. By that time, the mayor had been in office more than one year. Rarely are distributional issues so clear. Often detailed knowledge is required to make an informed judgment. To facilitate government generalists' participation in distributional decision-making, systematic analysis is needed of service distribution patterns and the decision rules that lead to these patterns.[2]

Another political dimension of service distribution involves citizen participation. Much of the urban turmoil of the 1960's stemmed from the belief by ghetto residents that they were discriminated against in the provision of services by local governments. Participation mechanisms, instituted in federal legislation in the anti-poverty program and the model cities program, reflected the goal of creating interest groups to lobby for a fair share of urban services for poor neighborhoods. Many federal programs require citizen participation. To implement the Housing and Community Development Act of 1974, for example, one of the acceptable formats involves an advisory group on which citizens are represented. This group participates in shaping annual project priorities to be funded under the Act.

Each of these arenas of citizen participation has functioned amid controversy and frustration. Conflict and negotiation are inherent in citizen participation processes. But there has been more cause for frustration than the process of citizen participation itself requires.

One cause of frustration is particularly applicable to requirements for citizen participation in local decisions about allocating funds made available to communities under the federal Housing and Community Development Act of 1974. Citizens may participate in deciding what projects should be financed with community development funds. Decisions are made about specific locations. For example, decisions are made about whether parks and playgrounds, sanitary sewer lines, street improvements, side-walks, and recreation centers should be located in one neighborhood— and at specific places— or in another neighborhood. Public officials may be accustomed to making these decisions without careful analysis of distributional priorities. The requirement for citizen participation in making these decisions increases the importance of service distribution analysis. These decisions would be enriched by information about service distribution patterns. However, systematic distributional information often is not available.

A final point of political significance stems from the financial problems which many local governments have experienced during the 1970's. The expansion of local services in the 1950's and 1960's has slowed in the 1970's. In some places, old and large central cities in particular, such as New York, Detroit, and Cleveland, local services have been retrenched. When services are static or declining in quantity and quality, fairness in their distribution becomes more important than when there is a service surplus with which to satisfy new demands. If retrenchment is necessary, the fairness of the retrenchment should be considered. Equity will be more salient in a period of scarcity. Winners and losers will become more evident and more aware of what they are winning and losing. Fairness in service reduction is most likely to be achieved using systematic service distribution data to provide perspective for difficult decisions.

Legal Challenges and Requirements

Interest in service distribution was accelerated when the courts barred severe service discrimination on the basis of race. The landmark case was Hawkins v. Town of Shaw, decided by the U.S. 5th Circuit Court of Appeals in 1972. In the town of Shaw, black neighborhoods, in comparison with white neighborhoods, suffered extreme disparities in regard to paved streets, water and sewer lines, street lights, and other services. Hawkins v. Town of Shaw prohibited severe inequalities which are explicitly related to racially segregated neighborhoods. How severe the inequalities must be and how explicitly these inequalities must be related to segregated housing patterns were ambiguous in the Hawkins decision and have become more so as a consequence of the U.S. Supreme Court decision in Washington v. Davis in 1976. Legal issues are examined in Chapter 5.

Service distribution decisions permit many subtleties which may escape judicial scrutiny, even though their effects may be discriminatory. It is not sufficient, for example, for service inequalities to be substantial. Service inequalities also must follow racial lines and be intended to be racially discriminatory. Poverty related service inequalities, for example, are not unconstitutional. The financing and daily provision of services also can be manipulated for a variety of purposes, including discriminatory purposes. Special assessment financing, for example, puts a premium on wealth. Those who lack sufficient wealth and willingness-to-pay may have to do without those services financed with special assessments, such as paved streets, sidewalks, and water and sewer lines. Daily administrative discretion also can be exercised in a discriminatory fashion. A courtroom colloquy between the defense attorney for a small southern municipality, which had been charged with creating racially motivated service disparities, and a black housewife illustrates the possibilities. The defense attorney demanded to know if the witness was suggesting that the community's fire-fighters responded more slowly to calls for service in black neighborhoods than in white neighborhoods. "Oh no," the woman responded. "They always come fast and they always leave us the chimney."

Many of the lawsuits involving service distribution have been brought against small communities in the South. These suits relied on the equal protection clause of the 14th Amendment to the Constitution. Suits also have been brought in New York City, Washington, D.C., Fairfax County, Virginia, Mobile, and Houston. In Mobile and Houston, alleged service distribution disparities were used as supplementary arguments in which the main purpose was to persuade the court to declare at-large systems of electing city council members unconstitutional and to require the election of council members from districts. These suits were based partially on the Voting Rights Act of 1965.

Additional challenges to service distribution patterns have been based on the non-discrimination provisions of the State and Local Assistance Act of 1972 (general revenue sharing). Several lawsuits of this type have been brought by the Lawyers' Committees for Civil Rights. Provisions of the Housing and Community Development Act of 1974 also could plausibly be used for some challenges to service distribution patterns. In cases directly involving federal funds, plaintiffs may seek to prevent the use of the federal funds until the court case has been fully resolved. Use of general revenue sharing funds was prohibited in Chicago, pending resolution of a suit involving alleged hiring discrimination in the city police department. Injunctions also have been obtained in suits against small communities in Mississippi, temporarily preventing the expenditure of general revenue sharing funds. Thus, three types of legal challenges can face communities involving service distribution— one focusing on constitutional equal protection violations, a second stressing voting rights violations, and a third based on statutory non-discrimination requirements in the use of revenue sharing funds.

The potential threat of lawsuits is another reason for local governments to identify their service distribution patterns. Action to correct disparities is likely to be taken by the courts as a sign of good faith effort, should a legal challenge arise. Available legal remedies may be sought with greater frequency by deprived groups. Judicial mandates to reallocate resources may involve the expenditure of large sums of money to correct service disparities. The intricacies of legal doctrine in this area make it imperative that public officials be informed about the constitutionality of service distribution patterns. In the absence of information about how public services are distributed, a particular city may be required to spend a great deal of money in a short period of time simply to defend itself against charges that it discriminates on the basis of race in service provision. A concern with equity in service distribution represents good economics. As Merget and Wolff observe, "Because of judicial decisions the call for an equitable distribution of public services is no longer merely a political slogan: it ranks as a legitimate, constitutionally based assertion that local officials must address."[3]

The chapter on legal issues is the only chapter in which interjurisdictional equity is discussed. Comparisons of one jurisdiction with other jurisdictions involve methodological problems and value considerations that are beyond the scope of our work here.

The Roles of Elected Officials and Generalists

Decisions about the distribution of services are routine decisions. They lack the salience of more dramatic, crisis-oriented public issues. Citizens and elected officials are concerned with, and pay attention to, proposed tax increases, zoning laws, the hiring or firing of the police chief, strikes by public employees, projected revenue shortfalls, rising crime rates, disciplinary problems in the schools, and possible service cutbacks. However, it is difficult to get excited about how new library books are distributed among branch libraries, how police patrol manpower is assigned, and how the garbage is collected.

Generalists (mayors, councilmen, city managers, budget directors, planners) have not sufficiently recognized and accepted the need to monitor and evaluate distributional decisions and patterns. Several reasons probably account for this attitude. It may be assumed that across neighborhood disparities in the provision of services are not great and that elaborate data collection and analysis procedures are not necessary to determine who is getting what. Generalists sometimes believe that they know how services are distributed. Often, these impressions will be grossly misleading. The empirical evidence from studies of a number of large cities strongly suggests that impressions about how resources are allocated are likely to be wrong.

Public officials also may not believe that differences in neighborhood service levels are particularly important. It is hard to see how 10 percent fewer books at a neighborhood branch library will have a significant impact upon the quality of life of the residents. In the absence of widespread citizen complaints about service disparities, the generalist will focus his attention on more pressing issues. It is true that it may not make a great deal of difference if one neighborhood has slightly better access to public library facilities or if its streets are less rough than another neighborhood's. However, the cumulative impact of even moderate differences in service levels may be significant.

If a particular neighborhood gets fewer scheduled garbage pick-ups per week than other neighborhoods, if it receives one or two fewer parks and playgrounds, if it is assigned fewer police patrolmen and has a higher crime rate, if the books in the local branch library are not responsive to reader preferences, if police responsiveness to requests for assistance is slower, if neighborhood streets are rougher and requests for maintenance and repair are ignored, if teachers in the schools are poorly trained and motivated, if teacher/pupil ratios are higher and the condition of the physical plant is inferior, if sewer and drainage systems are less effective, if water pressure is lower, and if it receives fewer fire hydrants, the cumulative impact in dollar terms and in terms of the difference it makes in the safety, convenience and well-being of the residents becomes significant.

What Should the Role of Generalists Be?

For a variety of reasons, decisions about service distribution are made within municipal service departments rather than by generalists. Administrators rely upon decision rules to make distributional choices. The consequences of the rule depend upon the service and the rule employed. Often, the consequences of the rule may not be known. The emphasis is upon the process of distributing services rather than upon evaluating the implications for equity in resource allocation.

In the absence of direction and broad guidelines from generalists, the administrator will have to establish goals for his agency and implement, at least implicitly, a particular conception of equity. The police department will decide whether resources should be allocated on the basis of need (crime rates), demand (calls for service), or equality. Choices will have to be made from among a number of possible alternatives. Should resources be allocated in such a way that an effort is made to insure that each citizen has an equal opportunity of being victimized? Should the service function be given priority over the crime prevention and investigation function? If generalists fail to establish policy guidelines, the library administrator will decide whether library services should be distributed on the basis of demand (circulation rates), equality, preference, or need. The streets department will have to decide whether to schedule maintenance activities on the basis of periodic inspections of neighborhood streets or on the basis of citizen complaints about needed repairs. In order to make these choices, administrators will rely upon their training, personal values, and the norms of their profession.

The generalist may occasionally intervene in the distributional process by responding to citizen and group complaints about the need for an additional playground, inadequate facilities at the neighborhood park, not enough police protection, and potholes in residential streets. Reliance upon citizen complaints may not provide the best means available to gather information on service distribution patterns. Some citizens are more critical than others in their evaluation of service quality. Because one neighborhood transmits a large number of complaints to public officials about the lack of services, or the inadequacy of existing services, does not mean that the residents are receiving fewer or poorer services than other neighborhoods. Rather, the residents of the neighborhood may be more likely than other citizens to become irritated by potholes in the street and trash left after weekly garbage pickups. They may also feel that a letter or phone call to city hall about a service grievance, attendance at city council meetings, or membership in a neighborhood organization will result in better service. Residents of other neighborhoods may make fewer complaints even though the services available may be no better and, in fact, may be worse. The citizens may simply feel less efficacious. They may not know where or how to complain about service problems and they may believe that a complaint would not do any good.

Generalists should establish procedures that would allow them to periodically review distributional decisions and patterns. Without data on the distribution of resources, activities, and results it is impossible to determine how services are distributed and how the distributional pattern can be changed. Generalists could require that individual departments collect information on resources, activities, and results. These distributional data could be reported on an annual basis along with the departmental budget. This would allow public officials to determine how services are distributed across neighborhoods and to make any changes in distributional policy.

Generalists should also evaluate the decision rules employed by municipal service departments. An analysis of decision rules, in conjunction with data on resources, activities, and results, will aid the generalists in gaining an understanding of the distributional implications of particular rules. On the basis of this information, the generalist may decide to direct changes in the rules employed in order to change the pattern of service distribution. The generalist needs information on both decision rules and the pattern of service distribution to evaluate equity in distribution and to make required changes.

Conclusion

George R. Schrader, City Manager of Dallas, observes that "The ultimate solutions to the problems involved in equitable service delivery are not easy ones, for the objective is elusive. . . . It is an issue that looms as perhaps one of the most formidable, thorniest, and most pressing concerns that will confront the urban management profession in the near future." He goes on to say that,

> . . . to permit these questions to be answered only in the arena of the courthouse is to admit and to accept failure on our part as managers and administrators. The issue of equity needs to be approached with the same determination and deliberation with which we approach all funding decisions. It will play a determining role in most of our future actions involving budget, personnel, program expansion, and citizen satisfaction. It must become an integral part of our planning processes. The development of management service programs should address equity concerns with the same emphasis with which we address aspects of economy and effectiveness. . . . To allow this opportunity to pass beyond us and to opt for legal remedies rather than responsive management is to shortchange our profession and our charge as public administrators.[4]

The purpose of this book is to show administrators and students how the concepts of equity and service distribution can be useful in local government planning and management. Efficiency and effectiveness are traditional goals of public administration. Methods have been developed to make these goals operationally useful. Equity is espoused, but its meaning is obscure. The undoubted importance of equity makes its meaning worth searching for. Equity will be a more useful concept if its several meanings are recognized and if administrators, and others, try to select carefully the particular conception of equity most appropriate to their service, circumstance, and values. This is a necessary first step. The key to operationalizing equity, however, is to develop methods to analyze service distribution and to identify the decision rules whose use leads to a particular pattern of service distribution. Concepts of equity, decision rules, and service distribution patterns then can be related to each other, debated, weighed, and reevaluated. Through this interaction, local officials can decide whether to change any, or each, aspect of the service distribution network— the dominant conception of equity, the decision rules, and/or the service distribution pattern.

FOOTNOTES

1. References in this chapter to decision rules and processes used in various communities are based on interviews with local government officials conducted by the authors.

2. The handbooks that accompany this publication, by the same authors, deal with police, solid waste collection, libraries, and parks and recreation. They examine decision rules and service distribution information systems in detail for these services.

3. Astrid E. Merget and William M. Wolff Jr., "The Law and Municipal Services: Implementing Equity," _Public Management_ 58 (August, 1976), 2-8.

4. George R. Schrader, _Public Management_, 58 (August, 1976).

QUESTIONS

In reflecting on this introduction to equity and urban service distribution, and in reading the chapters that follow, these are some questions to which answers should be found:

1. How much do urban managers know about the service distribution pattern in their communities?

2. How should service distribution be measured and analyzed?

3. What are decision rules, how are they used, and what influence do they have on service distribution?

4. What are some of the important conceptions of equity which urban managers should consider?

5. How can conceptions of equity be related to indicators of service distribution?

6. What is the relationship between conceptions of equity and decision rules?

7. Why is geographic service distribution analysis important in analyzing the effectiveness of local public services?

8. Instead of being decided, why do service distribution patterns often evolve and drift?

9. What role do elected officials and urban managers have in making distributional decisions?

10. What would adequate service distribution information add to the process of citizen participation in local government?

11. What did the court decision in Hawkins v. Town of Shaw do?

12. What constitutional provisions and federal statutes have provided the basis for legal challenges to service distribution?

CHAPTER 2. EQUITY AND SERVICE DISTRIBUTION

Several goals are sought by public officials when they consider how government services should be allocated. Three of these goals are efficiency, effectiveness, and equity. Each of these goals is abstract, subject to differing interpretations, difficult to define. However, we can define them sufficiently to distinguish them from each other. Efficiency concerns achieving results at least cost. Of two methods, the one achieving the result sought at the least cost is the most efficient. The goal of effectiveness focuses on results. The most effective program is the one that achieves the most of the results sought. Cost considerations are secondary. In practice, therefore, administrators try to balance considerations of efficiency and effectiveness.

Equity concerns who gets what. It involves fairness and justice. Is the distribution of benefits in society fair? Do the recipients of government services get the type of services they should receive in the amounts and the quality that are appropriate? Are public officials responsive to all citizens in all parts of the jurisdiction? Do some citizens get responded to in ways that differ from the responses others receive? Are services similarly effective in all parts of the jurisdiction? If not, is there a reasonable justification for differences in service effectiveness?

We are concerned with how the concept of equity can be used by local public officials in their deliberations about service distribution. We are concerned primarily with the services that nearly everyone uses, directly or indirectly. These are services like police and fire, solid waste collection, water supply, streets, libraries, and parks and recreation. The analysis of who gets what can be conducted most usefully by local government officials in geographic terms. What is the geographic distribution of services and is that distribution appropriate? Other approaches to equity analysis may be conceptually sound, but geographic analysis, we believe, is most practical for public administrators to use. The discussion in ensuing chapters embodies this geographic approach.

In this chapter, we examine five conceptions of equity--equity as equality, equity based on need, equity based on demand, equity based on preference, and equity based on willingness-to-pay. Our main concern is to clarify the implications of basing local service distribution decisions on one, or another, of these equity concepts. What are the likely consequences of basing decisions about where to locate public parks, how to distribute police manpower, and how to allocate funds to purchase new library books on one, or another, of these five conceptions of equity? Our aim is to help local public officials and citizens be self-consciously aware of the distributional implications of equity alternatives.

Equity as Equality

One important equity concept is that services should be distributed equally. Equal distribution has several meanings. These meanings have three dimensions. One dimension involves units of analysis. The second involves the range of permissible variation. The third dimension involves indicators of services.

1. Units of analysis.

We are concerned with two units of analysis. The first unit of analysis is the household. Some services are supplied directly to households. Examples are solid waste collection and water supply. Data can be gathered on the service that households receive in one neighborhood and compared with the service that households receive in another neighborhood. For example, an analyst may find that the frequency of solid waste collection at households in Neighborhood A is the same as the frequency in Neighborhood B. The meaning of equal service distribution, in this instance, is that households in one neighborhood receive services equal to those in other neighborhoods.

The second unit of analysis is the neighborhood or service district. Some services are not supplied to households. Instead, they are made available to neighborhoods or service districts. For example, a fire station is located to serve a district within a service radius. A park is intended, primarily, to serve residents for some distance on all sites. Neighborhoods can be compared with each other in terms of the adequacy of these services. Households within each neighborhood, however, will be varying distances from each park and fire station. The meaning of equal service distribution for parks is that each neighborhood has the same number of acres of parkland for every 1,000 residents.

2. Range of permissible variation.

Equal service distribution may refer to precise equality or to differences within a range of permissible variation. The example used above for frequency of solid waste collection is an instance where strict equality is possible. Solid waste may be collected from each household in each neighborhood exactly two times per week--no more, no less. It is unlikely, however, that each neighborhood will have exactly 10 acres of parkland for each 1,000 residents. It is also unlikely that the time it takes for the first fire truck to reach a fire after a call for service is received will be exactly three and one-half minutes in every neighborhood. Instead, an equal distribution of parkland and fire response time may mean that the differences among neighborhoods are limited--are within some permissible range of variation. An extension of this notion is that each neighborhood should be served at least at some minimum acceptable standard. For example, perhaps local public officials have set a goal of serving each neighborhood with at least 8 acres of parkland for each 1,000 residents. These officials may think of neighborhoods as having equal park land, once this standard is reached, even though some neighborhoods may have far more than the amount called for by the minimum standard. Under this notion of equal service distribution what is meant is that a minimum standard is reached or exceeded, not that services really are equal.

3. Indicators of services.

Equal service distribution is meaningful only in the context of indicators for measuring services. Services cannot be compared for equality in the abstract. Indicators must be selected. Chapter 4 is devoted to the presentation of a framework for analyzing service distribution. In that chapter, three categories of indicators are relied upon--indicators of resources, activities, and results. The difference between these categories can be illustrated with police services. One might analyze police distribution in terms of a) the number of police patrolmen per 1,000 neighborhood residents (a resource indicator); b) the average response time (the time from receipt of a call for service until the police officer's arrival at the scene) for each neighborhood (an activity indicator); or c) the clearance rate (the percentage of crimes cleared by the arrest of someone suspected of committing these crimes) for each neighborhood (a result indicator).

Equal service distribution could mean:

a. Equal numbers of police patrolmen per 1,000 residents;

b. Equal response time;

c. Equal clearance rates.

It is not important at this point for the reader to understand fully the distinction between indicators of resources, activities, and results. Our purpose here is to emphasize that the notion of equal service distribution is meaningful only in the context of specific indicators of service distribution. Because indicators measure different important aspects of service distribution, it is essential to use a multiple indicators approach to service distribution analysis.

Inconsistency Between Equality and Other Equity Concepts

The concept that equity requires equality is not easily reconciled with the concepts that equity should be based on need, demand, preference, or willingness-to-pay. To discuss these inconsistencies, each of these alternative equity concepts must be defined and briefly explained.

Need

Equity based on need assumes that some people have a greater need for public services than do other people and that these greater needs should influence the distribution of public services. How differing needs are identified is one complication with this equity concept. Another difficulty concerns how large differences in need should be before different levels of service are provided to deal with those needs. Some of the complications associated with need will be considered later at greater length.

At this point, it is sufficient to note that if needs vary and if services vary to some degree in relation to needs, then by definition services cannot be distributed equally. Thus, the notion that equity requires equality is inconsistent with the concept of equity based on need.

This statement of the inconsistency between equity as equality and need is too abrupt, however. There is potential for recognition of both the equality and need concepts of equity. One way to achieve this is through the permissible range of variation aspect of service equality discussed above. If fire response times must vary, and if park acreage per 1,000 persons must vary, then this variation can favor persons with greater needs. The notion of distributing services in order to achieve a level of minimum standards also permits variation in response to need. All neighborhoods can be provided with a minimum standard of parks, or libraries, or fire stations. However, some neighborhoods can be provided with services beyond this minimum standard. Those neighborhoods receiving more can be places where residents have greater needs. The apparent logical incompatibility between the equality and need concepts, therefore, is eroded by the range of permissible variation and the minimum standards aspects of service equality.

Demand

Equity based on demand means that public service distribution should be influenced by the explicit demands that people make for services. Demands can be expressed in several ways. Use of facilities (parks, libraries, buses, water, and so on) registers demand. Requests for services (a new park, playground swings, a paved street) express demands. Complaints about services (uncollected refuse, inconsiderate employees, inconvenient hours of operation) manifest demands. Voting, interest group activity, and public protests all communicate demands. Just as some people say they want more of a service, others say they want less, and some want the same amount but at a different level of quality. The distributional consequences of responding to demands will be discussed later.

At this point it is important to observe that equality is not consistent with demand-based equity, unless demands are equally distributed. Again, variation can be accommodated through the range of permissible variation and through the minimum standards aspect of service distribution. For example, all neighborhoods could be provided with services that meet a minimum standard. Services in excess of this minimum standard could be provided on the basis of demand.

The difficulty of reconciling equity based on demand with equity based on need also is apparent. The demand and need concepts of equity are consistent if those with greater needs express them as demands. Whether demands reflect needs accurately is an empirical question.

Preference

Another equity concept is that services should be based on preferences. Preferences include expressed and unexpressed wishes. An unexpressed wish still can be a preference. People may feel like requesting or complaining without doing so. They may want to use public services but are deterred by lack of money or accessibility. They may want to use a park but fear for their safety. It seems probable a) that not all people in one neighborhood want the same package and level of services, and b) that not all neighborhoods want the same package or level of services. Thus, equality and preference as equity are difficult to reconcile. Unless all preferences are expressed as demands, then the preference and demand concepts of equity also are inconsistent. Preferences also may not match needs. For example, need for park services could be measured by the income characteristics of neighborhood residents. One could infer that poor people have less private yard space, less interior house space, less money for private recreation, and less mobility to recreation opportunities outside of the neighborhood. Therefore, one could assume that residents of poor neighborhoods have a greater need for neighborhood parks than do the residents of richer neighborhoods. There is no guarantee, however, that needs measured in this or in any other way will be manifested in matching preferences.

Willingness-To-Pay

Willingness-to-pay measures both the presence and intensity of demand. It requires that preferences be expressed and that the expression of preferences be weighed in the crucible of how much services cost. Intensity is taken into account because expenditures made once cannot be made for other goods or services. Thus, some argue that preferences and demands are most realistically represented when they are expressed through willingness-to-pay for specific services. Equity, in this view, should be based on the willingness of consumers of services to pay for them.

Willingness-to-pay, however, is related to ability-to-pay. Since ability-to-pay is not equally distributed, willingness-to-pay is not likely to be equally distributed either. Therefore, this equity concept is inconsistent with equity as equality. Ability-to-pay may also be diametrically opposed to equity based on need. Willingness-to-pay is a variation on demand and preference. Thus, there should be similarities between them. However, many people with unexpressed preferences may not be willing to pay for them. Also, many people who complain about, make requests for, and use services might not do so if price tags were attached to these activities.

The Purpose of Noting Inconsistencies Between Equity Concepts

Judgments about equity require judgments about values. Choices must be made. Among these choices are the conceptions of equity that seem most appropriate. One could approach the subject by choosing one conception of equity and trying to fit it to every circumstance. We believe that the role of local public officials is too complex to make such a simple, all-purpose choice work effectively as a guide to decision-making. Rather, we think that public officials will do better by balancing these conceptions of equity, by picking one or two to fit most circumstances, but modifying them with other conceptions of equity under certain conditions. We have attempted to distinguish the conceptions of equity from each other. We will now consider some of the characteristics of, and problems with, the conceptions of equity based on need, demand, preference, and willingness-to-pay. At the end of this chapter we will suggest some general ways of using conceptions of equity to aid decision-making.

Equity Based on Need

The concept of need, as used here, refers to characteristics of people or conditions in society. Low income is such a characteristic. We think of low-income persons as having a greater need for most public services than better-off people because they have less potential for obtaining those services with private resources. In theory, it would be possible for all services that now are publicly provided to be privately provided in the future. Once this change is contemplated, it is easy to see that low-income persons would be deprived of more services that they previously enjoyed than would middle and upper income persons.

There also are specific indicators of need. Houses that are built with flammable materials and are close together create a condition of higher need for fire protection services than do houses that are less flammable and farther apart. The probability of the occurrence of fire is greater, in the first instance, as is the probability that the fire will spread once it breaks out. Furthermore, the potential for loss of life is greater. Although property values may be higher in the less dense area, potential property loss still may be less there because the potential for fire occurrence and spread is less. Therefore, conditions of flammable materials and houses located close together are specific indicators of need for fire protection.

It should be noted that need differs from preference. Preference is subjective. It is a matter of what individuals prefer. Need is objective. This does not mean, of course, that need is easily identified or that needs once identified can be compared readily. For example, it is difficult to compare the needs of one person or neighborhood with the needs of other persons or neighborhoods. But the concept does lend itself to outside judgment. A public official can decide that a certain variable, such as income, is a useful indicator of need and then use that variable as a partial guide to the distribution of a public service. However, even a general indicator of need (income, for example) should not be considered a good guide to the distribution of all services. One should also consider whether there are causal relationships between the condition of having low income and the nature of the public service. Will the goals of the service be better achieved by giving more of the service to some persons than to others?

It should also be emphasized that the concept of equity based on need is redistributive in nature. Equity based on need implies that the pre-existing distribution of benefits in society should be changed by government policy. It implies that the private distribution of resources is inadequate. We are accustomed to this concept with social welfare services.

Income maintenance programs, especially for the aged, infirm, and children, have long traditions. It seems less familiar to think of water supply, or police, or parks as services which also can be used to redistribute benefits to society. One could decide, of course, to use some services to redistribute benefits and to apply other equity concepts to other services. What we suggest here is that one be self-consciously aware of this alternative and of the reasons why one decides in favor of an equity based on need concept or rejects it.

Implications of Equity as Equality and Equity Based on Need

The question arises whether government has an obligation to respond to greater than average needs for urban public services. It could be argued that public officials only have a responsibility to provide an equal distribution of resources and that additional service needs over and beyond these minimal levels are a private responsibility. Equality as equity has the virtue of simplicity since it contemplates equal treatment of different groups. It is insensitive to a variety of characteristics and conditions that distinguish individuals, groups, and neighborhoods.

The poor person often experiences neighborhood disadvantages. His income level (and in some instances his race) often requires that he live in areas with greater than average service needs. Poverty neighborhoods have higher crime rates and are less safe than wealthy ones. Dilapidated wooden frame structures are more susceptible to the outbreak of fire than new brick homes. Families with spacious lawns, backyards, and single family dwellings have fewer needs than poor people for public recreational facilities. Poverty areas have more litter, debris, and unhealthy living conditions than richer ones. Residents of better-off neighborhoods are more mobile and less reliant on public transportation systems. The restrictions placed on the choice of residential location by race and wealth consign some groups to areas that generate extraordinary service needs.

Failure to respond to extraordinary service needs will have an effect beyond the fact that those individuals and groups deprived by the operation of the private sector will not be accorded special consideration in public sector distributional choices. As extreme examples, failure to provide a greater police and fire effort in run-down, high crime, poverty ridden neighborhoods can have spillover effects for other parts of the city. For other services, the consequences of an equal distribution of services across the entire city, regardless of need for services, are less clear. As a result, the reasons for responding to need are less compelling. Poor neighborhoods may need more public recreation services. However, failure on the part of government to address these needs may have little direct, short-run impact upon wealthier neighborhoods. Although the long-term results might be lower income and employment levels and a higher incidence of crime (which might affect other individuals and groups in terms of an increased tax burden to support more police and expanded welfare rolls), these indirect consequences are complex, poorly understood, and difficult to anticipate and demonstrate. Still, the actual spillover effects may be immense. An equal distribution of resources may not be in the best interests of even those who can manage to supplement public service provisions with private transactions. The externalities of ignoring need as a guide to service distribution may leave all groups worse off.

When Does Equity Based on Need Tend to be Acceptable to the Public?

Need as equity is viewed by the public as a more appropriate guide to resource distribution for some services than for others. Health and welfare services provide prominent examples of this perspective. Citizens are also willing to accept need as a basis for resource allocation for other services. A distributional policy that assigned more police manpower to high crime, poverty areas would probably generate little widespread opposition. Middle and upper-income neighborhoods also might want a greater police effort in their own communities. At the same time, they recognize that the incidence of crime provides a rational basis for the distribution of police manpower.

For other services, however,need as a guide to the distribution of services is accorded less legitimacy. Wealthier individuals are probably less willing to accept the argument that black (and other low-income) neighborhoods have a greater need for recreational services and should, in fact, receive more public resources. If crime rates are a valid indicator of the need for police services, why doesn't the number of idle youth congregating at street corners qualify as an appropriate measure of the need for recreation services? Several reasons probably account for the difference.

First, crime rates provide a relatively straightforward method for measuring the incidence of need. Many crimes are reported directly to the police and recorded on a daily basis. No such indicators are available to index the need for recreational services. In general, recreation departments do not regularly collect and disseminate on a neighborhood by neighborhood basis data on overcrowding at parks and playgrounds. Second, the citizen tends to perceive the incidence of reported criminal behavior in direct terms. The spillover effects of failing to provide a greater effort in high crime areas are recognized. A rising crime rate is interpreted in personal terms even though much of the increase may occur in other parts of the city. Indicators of need for recreational facilities lack drama and salience. Recreational services are thought of in locality-specific terms. Most citizens do not believe that these services have a significant impact upon life, limb, and property.

Equity Based on Need: Dimensions of Service Delivery

Another problem associated with need as equity revolves around an adequate conceptualization of the various dimensions of the service delivery and distribution process— resources, activities, and results. Although these issues are relevant considerations for each of the different conceptions of equity, they are particularly important when dealing with equality and need. Since these dimensions are dealt with in considerable detail in Chapter 4, our discussion will be brief.

If the public official relies upon the input of resources as the basis for responding to need, he will distribute more (expenditures, manpower, books, equipment, facilities) to high need areas. However, a greater input of resources may have little effect upon results (street cleanliness for refuse collection, arrest rates for police services). The basis selected by the public official to respond to need (resources, activities, results) will determine the effort required to achieve success.

Responding to need on the basis of an increased input of resources is an easier task to accomplish than responding on the basis of results. For example, the public official may allocate a somewhat higher level of expenditures for refuse collection to poverty neighborhoods. The increase in resources may lead to more garbage pick-ups than those received in wealthy areas. However, low-income neighborhoods may still have a greater need for refuse collection services if results are employed as the basis for evaluation. Inspection of the neighborhood may reveal that results, as measured by street, alley, curb and sidewalk cleanliness, odors, and health and fire hazards, are still inferior to those observed in upper-income areas.

Need on the basis of results is considerably more difficult to respond to because these dimensions are heavily influenced by factors and conditions largely beyond the control of public officials (income, social status, individual values of the consumer). The socio-economic characteristics of neighborhoods largely account for the social conditions that give rise to the variation in need for public services. At the same time, these characteristics exert a significant impact upon the extent to which a particular service will be effective in addressing a given social condition.

Demand as Equity

Demand for urban public services represents another standard of equity. Demand as equity can be approached and measured in two ways. For example, individual citizens or neighborhood groups or civic associations might "demand" that the city build another park or library or repair a residential street. These demands for public services could be transmitted by phone, letters, or petitions to department heads and the city manager or by visits to city council meetings. Demand for public services can also be measured in terms of user rates. The differences in attendance rates at neighborhood parks, the differences in circulation rates at branch libraries, differences in volume of traffic on residential streets, and differences in levels of calls for police assistance are indicators of the variation in the demand for public services.

Demand as equity incorporates responsiveness to patterns of consumer activity. More books for branch libraries with high circulation rates, more equipment and facilities for parks with high user levels, and more police patrols for neighborhoods that generate a large number of calls for police assistance appear to be examples of rational resource allocation. Demand also places the burden of expressing service preferences upon the consumer. The public official is not required to determine whether individual citizens, neighborhoods and groups want more police, parks or libraries. Although responsiveness to consumption levels does require that information be gathered on user rates for particular services, this procedure is relatively simple. Once a certain level of public services is made available, resources can be allocated and reallocated on the basis of user levels.

A second characteristic of demand as equity is that all demands can be treated equally. Decisions about which groups and neighborhoods have the greatest need for particular services are not necessary. The administrator can uniformly respond to a variety of demands and ignore complex factors such as the variation in need and preference.

A third aspect of demand as equity is that it tends to maximize responsiveness in resource allocation. From the standpoint of both the administrator and the citizen, it may make little sense to stock books in branch libraries that aren't used, to build a recreation center in a neighborhood where existing recreation facilities are under-utilized, to assign additional police patrol in areas that make relatively few requests for police assistance, and to frequently resurface streets in neighborhoods where traffic volume is low.

Demand as equity further contributes to responsiveness in service distribution by minimizing administrative feedback costs. Municipal departments can rely upon citizen complaints and contacts for information about potholes in residential streets, missed garbage pick-ups, stray animals, debris, and faulty drainage and sewer lines. Maintenance crews and resources can be scheduled and allocated in response to these citizen contacts. The administrator is not required to develop an elaborate inspection system to monitor the performance of various public services.

Problems with Basing Equity on Demand

Demand as equity has several shortcomings. Use of urban public services may be, and probably is, differentially distributed across neighborhoods and groups. If resources are allocated on the basis of consumption levels (circulation and attendance rates at libraries and parks, number of calls for assistance for assigning police patrol manpower, traffic volume for resurfacing residential streets) and poor neighborhoods use these services less, the subsequent pattern of service distribution will be skewed in the direction of wealthier areas.

The argument that failure to use a particular public service represents an expression of citizen preference for that service on the part of groups and neighborhoods cannot be accepted at face value. The spatial distribution of public service facilities may have an impact upon the extent to which they are used. If less mobile, low income citizens have to travel too great a distance to take advantage of a particular public service, they may decide not to use the service at all. A distributional policy that emphasizes consumer demand as a guide to resource allocation will further deprive those groups and neighborhoods initially disadvantaged by previous decisions about where public service facilities should be located.

Failure to use a particular service may also be related to the fact that the service is not responsive to citizen preferences. Branch libraries located in poor neighborhoods may have low circulation rates. However, the types of materials, facilities, and programs made available in low-circulation libraries may not be responsive to the preference of local residents. A distributional policy that emphasized responsiveness to the variation in citizen preference, as well as responsiveness to user levels, might well be reflected in subsequent circulation rates. As a result, the pattern of resource allocation on the basis of consumption levels could undergo a substantial shift.

In a related vein, failure to use a service may be a function of the substandard quality of the service provided. Citizens may not use a neighborhood park if it is poorly maintained and lighted, if it is understaffed, if it is unsafe, and if available facilities (picnic areas, playgrounds, athletic fields) are limited. Few calls to the police may mean that citizens of a particular neighborhood view police responsiveness to requests for assistance as inadequate. Repeated but unsuccessful attempts to obtain satisfactory service may eventually lead to a depressed level of citizen contacting.

Another shortcoming of demand as equity is that some groups and individuals are more likely than others to contact government officials about service related problems. The evidence suggests that blacks are less likely than whites to communicate a service grievance to public officials. If blacks are less likely to organize and join a neighborhood civic association and present their petition for a new park directly to the department head, city manager, council, or mayor, the additional recreational facility may be constructed in a neighborhood with a well-organized and vocal network of community associations. If street construction and repair priorities are determined in part by the number of citizen complaints and if blacks are less likely to complain about the quality of neighborhood streets, maintenance efforts may be diverted to those areas that generate a high number of contacts.

Equity Based on Preference

At a distributional stage, consumer preferences should be considered for some services. For example, there seems little reason not to consult neighborhood residents about reading tastes. Failure to do so may result in a library building that stands unused at worst, or that contains materials that are read and used reluctantly at best. If a decision has previously been made to provide neighborhood public library services, facilities that remain unused or under-utilized because of lack of responsiveness to citizen preferences represents an inefficient use of scarce resources. From the standpoint of fairness, there can be little justification for insisting that the bookstock in libraries located in ghetto neighborhoods solely reflect traditional middle-class reading tastes. Similarly, it seems reasonable for residents within the service area of a neighborhood park to be asked their preferences about facilities, equipment, and programs.

Equity based on preference has several implementation problems. First, the unit of analysis problem is relevant. If government attempts to respond to the variation in consumer preferences for public services, it must settle upon some geographical unit (block, tract, planning district, neighborhood). If the unit chosen is too large, racial and socioeconomic heterogeneity would present enormous difficulties.

A second problem is that individuals' service tastes may vary widely. A housewife may prefer that the local neighborhood branch library stock light fiction, the student might prefer job training, reference, and technical materials, while the working mother might prefer that the library provide day-care services and facilities. One group of citizens may expect the police to provide a quicker response to individual calls for police assistance, while still another group in the same neighborhood might prefer that the police devote a greater effort to a crackdown on criminal activity.

A third problem is that consumer preferences for particular services may be erratic and subject to change. The government's ability to respond to fluctuations in preference is limited. A decision to invest millions in the acquisition, construction, equipping, and staffing of a public service facility cannot easily be altered to accommodate a change in preference. Many citizens may be unsure about the value they place upon a particular public service. Since the consumer is not required to express his preference through the expenditure of private wealth, an expression of preference may never be required.

Shifting preferences may also occur as a result of population shifts. The prospects for including citizen preferences in distributional decision-making are enhanced in stable neighborhoods. Some services can accommodate changes in neighborhood preference brought about by mobile populations (foot vs. motorized police patrol, for example). For certain fixed public service facilities, however, such flexibility is much more difficult to realize. Residents' preference for park facilities may change from tennis courts to basketball courts and back again to tennis courts as the neighborhood population changes. The cost of responding to such changes in preferences is very high.

Equity Based on Willingness-to-Pay

A final standard of equity in service distribution will be briefly considered. Willingness-to-pay incorporates elements of demand and preference. Individuals decide what and how much they want to buy. Intensity of preference is measured by cost.

It can be argued that the most appropriate way in which to distribute a variety of urban public services is to duplicate the operation of the private sector as closely as possible. Some services in some communities are delivered on the basis of willingness-to-pay (water, gas, electricity, refuse collection, sewerage, some recreational services). It can be maintained that all services should be delivered on a fee basis. By tying service delivery to willingness-to-pay, some of the problems associated with preference (intensity of preference), need (definition and measurement), and demand (the variation in user levels may reflect insensitivity to the service preferences of some groups) are avoided.

Under this system, responsiveness in resource utilization would be enhanced since no citizen would receive a service he did not want. At the same time, responsiveness to preferences would be maximized. The service preferences of some would not be imposed upon others. The citizen could buy as much or as little of a particular service as he chose. He would not be required to pay for what other citizens consumed. Willingness-to-pay as equity assumes that the individual citizen knows his own interests and needs. He bears little responsibility for the service needs of others.

However, willingness-to-pay as a guide to service distribution incorporates a number of systematic biases. One of the distinguishing characteristics of public sector service provision is its potential for ameliorating the extreme inequities produced by the operation of the private sector. Each of the conceptions of equity previously discussed (equality, preference, need, demand) assumes that a redistribution of resources is appropriate. Although this often implicit notion of redistribution is more apparent for some perspectives(equality and need) than for others (preference and demand), each standard of equity entails a set of outcomes that differ from those of the private sector. In principle, individuals with higher incomes do not receive preferential treatment in service distribution.

Basing equity on willingness-to-pay would limit public control over resource distribution. Some disparities of the private sector would occur in the public sector. Income levels would influence who got what. Extraordinary service needs would receive little attention. The service preferences and priorities of citizens with limited incomes would be ignored. Equal treatment of different groups would not be a relevant consideration in distributional policy. Those individuals and groups deprived by the operation of the private sector would be disadvantaged by the public sector as well. The opportunities inherent in public sector allocations for counteracting and mitigating the inequalities produced by the private sector would be circumscribed.

Equity based on willingness-to-pay has consequences beyond the fact that service levels would be closely related to the citizen's standing in the socioeconomic hierarchy. Poverty neighborhoods would receive no more parks, police, libraries, garbage pick-ups, and transportation services than they could afford to buy with private funds. While these purchases might accurately reflect service priorities, preferences would be satisfied in direct proportion to the level of personal wealth. Since income levels in these neighborhoods are generally not sufficient to satisfy more basic needs (adequate housing, for example), it is unlikely that a significant percentage of available private wealth would be diverted to traditional urban services.

The spillover effects of extreme differentials in neighborhood service levels are unknown. However, it is probable that the consequences of depressed service levels are not limited to the deprived neighborhood. Beyond some threshold, it is likely that too little police and fire protection, inadequate refuse collection, and too few recreation and transportation services will, in the long run, have a significant and detrimental impact upon adjoining and even distant neighborhoods. In all likelihood, these anticipated consequences account, in part, for the limited use of willingness-to-pay as a system for organizing the delivery and distribution of a variety of basic urban services.

Why Are Fees Charged for Some Services?

Why, then, does willingness-to-pay govern the use of some services in some communities (water, gas, electricity, sewerage, refuse collection, recreational services)? Several factors are probably important. For many of these services, the spillover effects are limited in terms of their impact upon other individuals, groups, and neighborhoods. The individual who cannot afford the purchase of an energy supply sufficient to meet heating needs may be deprived in terms of comfort, convenience, and personal well-being. Inability to purchase adequate amounts of heating fuel has little or no direct and immediate consequences for others. The parent of the child who cannot afford the $1.00 admittance fee required for use of a swimming pool located in a public recreation center may be irritated by a policy that ties service consumption to willingness-to-pay. However, it is unlikely in most instances that the denial will be perceived to affect other individuals.

Willingness-to-pay is less likely to apply to other services (police and fire protection, for example) because the spillover effects of inadequate service levels in some neighborhoods are more obvious. There is a sense in which these activities are perceived to benefit the community as a whole. A string of armed robberies and a series of rapes in one part of the city may affect public perceptions of community safety, security, and well-being in other parts of the jurisdiction. In addition, the persons victimized usually are not personally to blame for their own victimization.

Some services fall between the extremes of no perceived spillover effects on the one hand and extensive effects on the other. The location of a particular service on the spillover continuum may account, to some unknown degree, for the extent to which willingness-to-pay is employed as a distributive principle. For example, in some cities responsibility for the construction of residential streets falls upon the housing project developer. Future residents assume indirect construction costs through the purchase price of a home or through bonded indebtedness. The city eventually assumes maintenance and repair responsibilities if the streets meet certain design specifications and construction standards. In this case, it may be that willingness-to-pay is combined with some other conception of equity in resource allocation because spillover effects are perceived. Use of neighborhood streets may not be limited to residents of the area.

Refuse collection provides another example. In the public mind, service delivery on a fee basis may be more appropriate for garbage pick-up than for police and fire protection but less acceptable than for some recreation services. If trash collection is tied to willingness-to-pay, it is likely that poverty neighborhoods will receive inferior service. In the short run, the spillover effects for others of substandard service will be minimal. Immediate consequences will be limited to unsightly neighborhood conditions. Beyond a certain level, however, grossly inadequate refuse collection activities in one neighborhood will be perceived to have an impact upon the appearance and health of other parts of the community.

Another factor which probably influences the use of willingness-to-pay as a guide to resource distribution has to do with the extent to which the amount of service consumed can be easily and effectively measured. The amount of water, gas, and electricity delivered to individual dwelling units can be precisely measured and the customer billed accordingly. The number of people using a swimming pool or public transportation facility can be easily counted and service fees can be collected upon admittance. For other services, however, the amount of service consumed and the fee to charge for a given service are difficult to determine. Who should pay the costs of suppressing a fire if the blaze occurred through no fault of the homeowner and if adjoining residences benefit from the suppression? Who should bear the expenses incurred if the police are called upon to quiet a noisy party in response to complaints from a number of irate neighbors?

For some services (police and fire) and under some conditions, the cost of the service to the individual citizen would be prohibitive. The costs involved could be defrayed by assessing some geographic unit (neighborhood or census tract) for the expenses incurred. A neighborhood could contract for a given level of police and fire services. The residences would receive only as much of a particular service as they could afford to purchase. However, a decentralized approach to service delivery would violate the assumption that a minimum or greater amount of some services is necessary to guard against spillover effects.

Using Equity Concepts in Making Decisions

A discussion of equity is a complex undertaking. Uncertainty about how this complexity can be put to practical use may occur. Though this uncertainty is to be expected, it also may be exaggerated. After all, equity concepts inevitably are used at least implicitly by public officials whenever decisions are made to leave the distribution of services as it is or to change it. Deliberations may not be framed in equity terms, but consequences for equity are unavoidable because distribution concerns who gets what and whether the pattern that results is fair. Our purpose is to help participants in deliberations about service distribution make more self-consciously aware decisions. In making those decisions, there should be five key questions from an equity perspective. These five questions are:

1. Which equity concepts are most relevant to a particular service and to which aspects of the service should they be applied?

2. What decision rules are most important in determining the current distribution of the service and how, if at all, should these decision rules be changed?

3. What is the current distribution of the service and how can this service distribution best be measured?

4. Does the existing service distribution pattern raise questions about constitutionality, or does it violate requirements of federal statutes?

5. Who should participate in making distributional decisions (administrators and their staffs, planners and budget officials, chief executives, members of the local legislatures), and what process should they go through in making these decisions?

The purpose of this book is to provide a foundation for clearer thinking about these questions. Separate chapters are devoted to each of these questions. There is no way to provide a formula for such complex, value-laden subjects that public officials can apply to whatever local situations arise. Suggestions can be provided, however, for organizing the analytical process and for applying it to specific services. In the remainder of this chapter, we will suggest how to determine which equity concept is most applicable to a given service issue. We will also provide an example of how these equity concepts can be applied to issues of park service distribution.

Applying Equity Concepts

At the analytical stage, three steps should be taken:

1. What advantages does each equity concept have if applied to a service?

2. What disadvantages does each equity concept have if applied to a service?

3. For each aspect of the service, which equity concept seems most appropriate?

The main questions to ask in determining advantages and disadvantages include the following:

First, who will benefit if the concept is used?

Second, will there be spillover effects if the concept is applied?

Third, is it administratively practical (cost effective and politically reasonable) to apply the concept?

These questions can be applied to any aspect of any service. In the section that follows, we apply them to the distribution of neighborhood parks.

Applying Equity Concepts to Neighborhood Parks

Neighborhood parks are generally a few acres in size, with a playground and playfield, and great variety beyond that in the facilities that may be available. They tend to be for active outdoor recreation, though they could have passive facilities and indoor facilities. What are the advantages and disadvantages of applying the five equity concepts to neighborhood park services?

First, who will benefit? Equity based on need, assuming need to be a function of income and wealth, tends most toward the redistribution of resources to benefit poor people. Since poorer people have less private open space, less interior play space, fewer funds to purchase private recreation, and less mobility to travel to recreation outside the neighborhood, a need basis for distributing neighborhood parks would provide poor neighborhoods with more parkland and facilities than other neighborhoods would receive. Willingness-to-pay, because of its relation to ability-to-pay, tends most toward inegalitarianism. Those who already have the most private resources are most favored in gaining access to public park services. Equity as equality rests in the middle. It leaves the distribution of benefits undisturbed. One should note that the issue of who pays taxes to the general fund from which parks are provided is not being considered here. The effect of demand and preference criteria of equity depend on empirical conditions— what people want and what they do. The tendency is for middle and upper-income neighborhoods to be better organized than low-income neighborhoods to seek government services. The demand pattern that exists in a given place for parks, however, may deviate from this pattern.

Second, will there be spillover effects if the concept is applied? If low-income neighborhoods get more neighborhood park services, there are not likely to be spillover effects in other neighborhoods. This is based on the assumption that a reasonable minimum level of park service is provided elsewhere. Spillover effects from park services are likely to occur primarily because unoccupied youths engage in activities that others dislike. Thus, willingness-to-pay, if applied widely, could have spillover effects. Whether these effects occur, what triggers them, and how serious they are is highly speculative. The most reasonable perspective probably is to assume that spillover effects from applying the equity concepts would be slight, with the possible exception of willingness-to-pay.

Third, is it administratively practical (cost effective and politically reasonable) to apply the concept? Both equality and need criteria may be costly to apply. Sometimes, low-income neighborhoods are deprived partly because they are developed, land is expensive, and land for parks was not donated or acquired quickly enough historically to meet current requirements. This consideration is more applicable to parkland acquisition than it is to facilities and programs. Demand is practical to use because it gives priority to areas that seek services and provides less to those whose residents seem less concerned. Preference is difficult to discern. Therefore, its utility is limited to situations where current preferences may be a guide to future use, such as when decisions are made about what facilities to include in a new park. Willingness-to-pay can be used for park acquisition in developing areas, if the cost can be included by developers in the purchase price of residences, or if residents are organized to tax themselves. Willingness-to-pay also can be used for specialized facilities, for which the interest of most people is low but the interest of a few people is intense.

One important equity issue for park services concerns how accessibility and price should be combined. How close should which park services be to which people and at what price should services be made available?

From our value perspective, the following distinctions seem helpful:

1. Facilities that serve many purposes and potentially serve much of the service area population should tend to be equally distributed or skewed toward need. Examples would be neighborhood parks and recreation centers. They should be free to users. Charging general purpose costs to the general fund seems appropriate. Besides, monitoring and charging for general park use is costly to administer.

Facilities that serve a single purpose can with greater justification be unequally distributed. Officials reasonably may charge for their use, perhaps sufficient to pay the full cost of providing them, since those who want to use them are but a small portion of the total taxpayers of the jurisdiction. The argument for general services, like recreation centers and neighborhood parks, being skewed toward need is made stronger by the probability that regional parks, as well as public state and federal parks, will tend to be more remote and therefore more accessible to people with more income. Equality of access to the sum of park services may require that certain services, such as neighborhood parks and recreation centers, be located to favor lower income neighborhoods.

2. There are legitimate roles for demands to be expressed and for preferences to be elicited.

a. Acquisition of parkland. Consideration of the appropriate distribution of parks, recognition of natural land features, and issues of cost should dominate land acquisition decisions. However, there is a role for the views of residents. For example, how do residents expect that a particular site will affect noise and traffic in the neighborhood, and how accessible to them do they believe the site will be?

b. Long-range planning of facilities. Although many aspects of parks planning benefit from professional training and judgment, ultimately the issue is: Who will use the park and how will they use it? One useful place to begin is by asking people what they want. Which alternative, among a set of feasible alternatives, do they prefer? What facilities do they want? What equipment? What facilities should be developed first? Where should they be located?

c. Annual programming. Determination of what team sports to organize, what activities to offer, and what courses to provide is facilitated most by examining use and by considering demands expressed through participation in the current year and in preceding years. By looking at earlier years, trends can be observed. Current and past use is not the only important consideration. Since use is confined to opportunities currently available, attempts also should be made to determine the interest of citizens in programs not presently offered.

From our value perspective, equity considerations in the provision of park services can be summarized in this way:

There are reasonable arguments for favoring low income neighborhoods based on both need and equality concepts.

Willingness-to-pay has an increasingly important claim as services become more specialized.

Demand and preference each have a role in issues of land acquisition, long-range planning of facilities, and annual programming.

Conclusion

The objective of this chapter has been to clarify alternative conceptions of equity and to sensitize readers to the distributional implications of equity alternatives. There is no formula for making equity judgments. But neither is there any formula for making judgments about efficiency and effectiveness.

Every service distribution pattern reflects one or more conceptions of equity. Therefore, every decision that affects service distribution has equity implications. No decision, or a decision to leave things as they are, amounts to acceptance of the current pattern of who gets what.

Although equity judgments are inherently political in that they concern basic values about the distribution of benefits in society, the evidence indicates that administrators have much greater influence on service distribution than do elected officials. Furthermore, departmental administrators seem to have more influence than generalist administrators such as city managers, budget directors, and planning directors.

In our opinion, the process of making judgments about service distribution should be open to more participants both inside and outside of government. Each participant should be more sensitive to the equity implications of distributional decisions than has customarily been the case.

Questions for Self-Evaluation

1. What are five conceptions of equity? Explain what they are and how they differ from each other?

2. What does equality as equity mean? How can equality be operationalized?

3. In what sense is need an objective condition? What effect will basing equity on need have on who benefits from services?

4. What are the differences between demand, preference, and willingness-to-pay?

5. For which aspects of which services are you attracted to using demand as the basis for equity judgments? Preference? Willingness-to-pay?

6. Describe a sequence of thinking and analysis about equity that can help public officials apply the concept to service distribution alternatives.

7. Pick a service and apply to it the questions about who will benefit from using each equity concept, will there be spillover effects, and is it administratively practical.

CHAPTER 3. DECISION RULES AND THE DISTRIBUTION OF URBAN PUBLIC SERVICES

Decision rules are standard operating procedures used by municipal departments to distribute public services. These rules routinize behavior and simplify decision-making. They eliminate the need to consider a variety of alternative solutions each time distributional decisions are made. The recurring issue of how services should be distributed is resolved by employing rules. Decision rules often rely on technical-rational rather than political criteria. Administrators probably do not consciously decide to provide some groups and neighborhoods with better or more services than others. Services are distributed on the basis of criteria that are technical in nature— crime rates and calls for assistance for police services, and attendance levels for special recreation programs.

The consequences of using decision rules may not be understood outside of the department. Rules are applied objectively. They appear to be fair. Decision rules, however, have distributional consequences. They incorporate some notion of equity. This conception of equity often is implicit rather than explicit.

A consequence of decision rules is that they influence who gets how much of what. Therefore, government generalists should be aware of how rules affect the pattern of service distribution. Decision rules are the means by which distributional outcomes are determined. If city managers and mayors, council members, budget directors, and planners want to influence service distribution, they must influence the shaping of decision rules. In this chapter, we provide examples of decision rules for police, libraries, and parks that are used in several large cities. We also discuss the distributional significance of decision rules for these services.

The Function of Decision Rules

Decision rules are important in all organizations. They provide order and simplicity. They enhance communication. They resolve, and avoid, conflicts. They submerge value judgments.

Eight propositions are presented below that describe the functions decision rules perform in organizations.

Propositions

1. Distributional decisions in municipal service departments are made on the basis of organizational decision rules and are little affected by explicit racial and socioeconomic criteria.

2. Distributional decisions are "programmed" decisions in that they are repetitive and routine and "a definite procedure has been worked out for handling them so that they don't have to be treated de novo each time they occur. . ."[2]

3. Decision rules serve as the memory of the organization, transfer past learning and reduce uncertainty. Allison writes that,

> Uncertainty is a critical factor of the environment in which organizations live. Organizations seek to avoid uncertainty. The first rule is: solve pressing problems rather than developing long-run strategies. The requirement that events in the distant future be anticipated is avoided by using decision rules that emphasize short-run feedback.[3]

4. Rules simplify decision-making by eliminating the need to consider a variety of alternative solutions to the performance task. Simon observes that "a matter has become part of the organizational routine when it is settled by reference to accepted or approved practices rather than by consideration of the alternatives on their merits."[4] Tradeoffs among goals are neglected. Perrow writes : "Frequently, there is no clear ground for doing A instead of B; both will have unpleasant outcomes. Rather than agonize over a decision, a rule cuts the knot."[5] Rules provide a guide to decision-making when several choices are equally appropriate.

5. Rules are resistant to change. Perrow observes that,

> Rules are like an invisible skin which bundles together all the technological and social aspects of organizations. As such, rules stem from past adjustments and seek to stabilize the present and the future. When things are different in the future, an attempt to change the tough invisible threads means that all kinds of practices, bargains, agreements, and payoffs will tumble out of the web and must be stuffed back in again. As a result of these kinds of interdependencies, changes in organizational rules are generally incremental.[6]

6. Rules make for reliable performance, easy application, and coordinated activity.

7. Organizational rules are influenced by the records maintained by the organization since "the records that are kept determine in large part what aspects of the environment will be observed and what alternatives of action will be considered."[8] However, much information is unreliable and there is more information than can be efficiently processed and analyzed. Therefore, Cyert and March maintain that,

> One of the ways in which the organization adapts to the unreliability of information is by devising procedures for making decisions without attending to apparently relevant information. Thus, the internal biases in the organization increase the pressure (from external uncertainty) to develop decision-methods that do not require reliable information (other than the simplest, most easily checked information).[9]

Consequently, rules tend to be simple.

8. The origin of decision rules can be traced to organizational experience and the impact of extraorganizational norms. The rules are maintained by recruitment, training, and socialization. Perrow observes that one way "of reducing the number of written rules is to 'buy' personnel who have complex rules built into them." These professionals "are trained on the outside, usually at the public expense, and a large number of rules are inculcated into them. They bring these into the organization and are expected to act upon them without reference to their skills."[10]

Implications of Decision Rules for the Distribution of Services

1. Every organizational rule has distributional consequences.[11]

2. Because rules are objectively applied and enforced, they appear to be fair.[12]

3. Because the question: what is the proper basis for determining an equitable fair distribution of service? is subject to many interpretations (equality, need, demand, preference, and willingness-to-pay), decision rules will be particularly significant in those municipal agencies with major responsibility for the distribution of urban public services.

4. Any specific standard of equity (fairness) in service distribution can be criticized, and supported, on a number of grounds. Considerations of equity will not be made explicit in the decision rule selected. In fact, the rule will tend to avoid potential conflict over who should get what by emphasizing technical-rational rather than political criteria. Conventional and quantifiable rather than controversial solutions to the performance task will be incorporated in the rule.[13] Consequently, certain values about who should get what will be systematically excluded. This emphasis upon technical-rational criteria and "objective" solutions is reinforced by recruitment, training, and extraorganizational norms.

5. Because organizational rules tend to be defined in technical terms, the distributional implications are little understood. Consequently, the rule is seldom if ever subjected to challenge on distributional grounds. As Simon observes, policy questions where "technical complexity hides the value issues" are less likely to become political "than matters readily accessible to common sense."[14]

6. Organizational rules are resistant to change. Therefore, the distributional pattern at one point will bear a marked resemblance to the distributional configuration at another.

Specific Examples

Do decision rules determine distributional policy to the extent suggested in the literature? Do decision rules incorporate conceptions of equity? Does their application in municipal service departments have consequences for the equitable distribution of services? The evidence from several cities suggests that decision rules do play a major role in decisions about service distribution and that the use of these rules may have distributional consequences for certain groups in the population. Decision rules do incorporate conceptions of equity. Sometimes, these implicit conceptions about what is equitable in service distribution operate to the disadvantage of certain neighborhoods. Specific examples to illustrate the role of decision rules and the way in which these rules incorporate conceptions of equity will be useful.

Police Decision Rules

In Boston, Charlotte, N.C., Houston, Richmond, and Rochester, the conceptions of equity employed in police departments to guide service distribution are demand, need, and equality.[15] In Rochester, N.Y., for example, patrol officers are assigned to districts on the basis of calls for service (demand) and crime rates (need). However, each district also receives a minimum number of patrol officers. This number exceeds the manpower level some districts would qualify for if crime rates and calls for service alone determined resource allocations. Therefore, need and demand are modified by equality.

In all five cities, each district is assigned a minimum level of patrol manpower based on territory and population. Beyond these minimum standards, manpower assignments are determined by variation in calls for service and variation in crime rates. Reported crime rates, rather than actual crime rates, which can be determined with victimization surveys, are used in distributing patrol personnel. Since victimization rates often differ from reported crime rates, the use of victimization data might produce a substantially different patrol distribution pattern.

In assigning police investigators, decision rules also are used. In Charlotte and Richmond, crime rates are given first priority and the severity of the crime receives second priority in assigning investigators to districts. The severity of the crime is given highest priority in New York City and Rochester. In New York City, crime rates are considered second, and in Rochester, a district's population is considered second. In Rochester, each of the seven police districts in the city receives eight investigators. In Boston, on the other hand, crimes of vice are given top priority, followed by an estimate of the workload, which includes judgment about the amount of time each investigation will take. In Fairfax County, Va., workload is considered first, followed by the severity of the crime and the prospects of making an arrest. Crime rates are considered fourth (see Table 1).

Table 1. Assignment of Investigators by Police Departments

Ranking by police administrators of factors that influence the distribution of police investigators.

	Population	Crime Rates	Severity of the Crime	Arrest Prospects	Balance Arrest Rates	Other
Boston		4	3			(vice, workload) 1, 2
Charlotte		1	2			
Fairfax County		4	2	3		(workload) 1
New York City		2	1			
Richmond		1	2			
Rochester	2		1			

Response time is another important variable in evaluating police services. In Boston, Charlotte, Houston, Richmond, and Rochester, response times to calls for service are determined by the nature of the call. Reports of serious incidents receive top priority. Police officials maintain that an effort is made to achieve equal response time among districts. A burglary report from a high income district will not receive a more rapid response than a burglary report from a low-income district. In four of these cities, response time data are neither gathered nor analyzed. Therefore, there is no way to determine whether responsiveness to citizen requests for police assistance is equally distributed among districts in these cities. The exception is Boston, where response time data are maintained by district for different types of calls.

No effort is made in these cities to achieve equal arrest or clearance rates (equality of results) or equal crime rates (equality of impacts) among districts. In some of these cities, data on arrest and clearance rates are not even maintained by district. Crime rate data are maintained by district, and crime rates vary widely, of course, from district to district.

Library Decision Rules

The decision rules most often employed to guide the distribution of library services incorporate demand, need, and equality. Different library departments use different combinations of rules to distribute services. In Oakland, Calif., and Houston, Texas, expenditures, staff personnel, and new acquisitions were distributed to branch libraries on the basis of circulation rates. The higher its circulation, the greater the share of available resources a branch library received. Since residents of middle and upper-income neighborhoods read more, branches located in these neighborhoods received more resources.

The cities of Atlanta, Charlotte, Richmond, and Rochester, employ similar rules to distribute new books and materials to branch libraries. In each city, total circulation (demand) plays a major role in resource distribution. Branch libraries with high circulation totals receive a larger share of available resources. Branches located in poor neighborhoods receive more resources than they would receive if circulation totals alone were used to distribute books and materials. Need as equity (income level) is used to temper demand as equity (circulation totals). In each city, each branch library is provided with a minimum level of services. High circulation branches qualify for additional shares of available resources.

In Boston, Hartford, and Pittsburgh, a different set of decision rules guide the distribution of library services. The library department in Pittsburgh relies upon equality and demand to distribute new books and materials. In Pittsburgh, each branch receives a minimum level of resources. Second, use of services, programs, and facilities is an important factor in allocating resources over and beyond these minimum levels. This decision rule emphasizes frequency of use of all library services rather than book circulation. Consequently, the use rule employed in Pittsburgh differs from the book circulation rules relied upon in Atlanta, Charlotte, Houston, Oakland, Richmond, and Rochester.

A somewhat different rule guides service distribution in Boston and Hartford. Branch libraries are divided into two categories (large and small). Large branches receive more resources than small facilities. Within each category, resources are distributed on an equal basis to branches.

In none of these cities are surveys conducted to determine neighborhood preferences for library services. Public meetings with neighborhood groups are not held to ascertain citizen preferences. Instead, the professional staff in each branch is relied upon to determine and respond to neighborhood preferences for library services. Although branch librarians in each city have considerable control over the choice of books and materials they wish to purchase, this authority is limited. In Pittsburgh, for example, department heads in the central library administration (reference, science/technology, art, music, "popular" materials) decide which books and materials should be purchased for the entire system. Branch librarians are limited to making selections from these purchases.

Cities use a variety of rules to determine the location of new branch libraries. In Rochester, three rules are important. Priority is given to a maximum distance rule. Libraries are located so that a significant number of residents do not live further than an acceptable maximum distance from a branch library. In Rochester, this acceptable distance is two and one-half miles. A second rule used to determine the location of new branches relates the size of existing branches to the density of neighborhoods. Standards are used for the number of square feet of library space needed per 1,000 residents. If a neighborhood is deficient in branch library space based on this density standard, then it is given extra consideration when the location of a new branch is decided. A third factor that affects the location of new branches is the availability of land. Sites that qualify on the basis of the above criteria sometimes are not available.

In Richmond, the location of new branches is determined by the maximum distance, size and density rules. However, the acceptable maximum distance to the nearest library differs on the basis of the race and wealth of the neighborhood. Because low income residents have limited mobility, libraries are located so that residents of poor neighborhoods have to travel a shorter distance to reach the nearest branch library.

In Charlotte, the maximum distance (two and one-half miles), size and density rules are most important in determining library locations. In addition, low income neighborhoods are given extra consideration in locational decisions, since it is felt that greater accessibility will increase use on the part of low-income citizens. Although less important, circulation levels and citizen requests are also considered. Neighborhoods that heavily use available library services and neighborhoods that have been particularly outspoken in seeking additional library service will be given consideration when locational choices are made.

In Hartford, citizen requests are the most important factor in determining the location of new branches. A maximum distance rule is also important. As in Charlotte, Houston, and Richmond, the branch library service areas in Hartford are drawn so that residents of poor neighborhoods have to travel a shorter distance to reach the nearest branch. Therefore, locational decisions in Hartford are affected by three decision rules:

citizen requests and complaints, maximum distance, and the income level of neighborhoods.

Boston employs a single rule to guide locational choices. When funds for the construction of a new branch become available, the facility will be constructed on or near the site of the branch most in need of replacement (based on age/deterioration). In the past, locational decisions in Pittsburgh were based on a maximum distance rule (25,000 citizens within one mile of a branch library). In addition, citizen requests were also considered. The library department believes that the maximum distance rule has now been implemented in all city neighborhoods. There have been no requests for additional branch services in the last seven or eight years. In fact, the Library Board is considering whether to close some existing facilities.

In Atlanta, a maximum distance rule is important. Neighborhoods without a branch library are given consideration in locational decisions. The distance rule is not uniformly applied in all neighborhoods. It is felt that poor neighborhoods will not use library services. Limited resources require, therefore, that consideration also be given to expectations about use in locational choices. These two rules— maximum distance and projected use— are important factors in deciding upon library sites.

In general, a maximum distance rule is most often employed to determine the location of new branch libraries. New branches are located in Atlanta, Charlotte, Hartford, Houston, Richmond, and Rochester so that residents do not live farther than an acceptable maximum distance from a branch library. In Charlotte, Hartford, Houston, and Richmond, the distance rule is not uniformly applied among neighborhoods. Since residents of poor neighborhoods have limited mobility, service areas for libraries located in these neighborhoods are smaller than they are for branches located in wealthier neighborhoods. Therefore, residents of poorer neighborhoods have to travel a shorter distance to reach the nearest branch.

Park Decision Rules

Decision rules for park services tend to be less precise than for some other services. Several rules seem to be balanced in ways that are difficult to specify. The following are decision rules that could be balanced in distributing expenditures for facilities and equipment to existing neighborhood parks:

1. Expenditures for facilities and equipment are distributed in part to meet recreational standards in the community. Suppose that the standard is one basketball court per 500 people. Neighborhood parks that are deficient on the basis of this standard will receive more expenditures than parks that meet minimum standards.

2. Expenditures for facilities and equipment are distributed in part to replace or repair deteriorated items.

3. Expenditures for facilities and equipment are distributed in part based on user rates. Neighborhood parks that are used heavily tend to get extra consideration.

4. Neighborhood parks in low-income neighborhoods tend to receive more expenditures for facilities and equipment, because residents in these areas have a greater need for recreation services.

5. Park size is an important consideration. Large parks receive more expenditures for facilities and equipment than smaller parks.

6. Requests and complaints from residents are considered in distributing funds to neighborhood parks for facilities and equipment.

Each of these rules will have distributional consequences. Rule 1 (recreational standards) incorporates equality as equity. If this rule is followed, each park will have the same number of facilities and amount of equipment per X number of persons. Rules 2, 3, and 4 tend to incorporate demand as equity. Rules 2 (replace or repair deteriorated equipment and facilities) and 3 (user rates) distribute resources on the basis of use of parks. Although replacement or repair of equipment and facilities may be required because of vandalism, heavy use also may require that a disproportionate share of available funds be spent at some parks for these purposes.

Rule 4 (low-income) incorporates need as equity, while rule 5 provides an equal distribution to parks of the same size. If large parks are equally distributed among neighborhoods, some areas are not deprived by allocating resources on the basis of park size. If large parks tend to be located in some types of neighborhoods and not in others, however, resource distribution on the basis of size will result in an unequal distribution of expenditures for facilities and equipment.

The decision rules used by parks departments to distribute expenditures for facilities and equipment to neighborhood parks are ranked in Table 2.

The decision rules most often used to distribute expenditures for facilities and equipment in these communities incorporate demand as equity. In Boston and Fairfax County, Virginia, responding to citizen requests and complaints is the most important rule used to distribute expenditures among neighborhood parks. The citizen input rule is also important in Rochester and Pittsburgh. The deteriorated facilities and equipment rule receives top priority in Charlotte, Pittsburgh, and Rochester. This rule is also ranked third or higher in Atlanta, Boston, Cleveland, and Richmond, while user rates are ranked third or higher in Boston and Hartford.

Hartford and Richmond rely on rules that tend to emphasize equality. In these cities, expenditures are distributed to neighborhood parks in order to meet community standards for facilities and equipment. For example, if the standard is X number of playgrounds or ballfields per X number of residents, parks that are deficient on the basis of this standard receive priority. The recreational standards rule also was ranked second in Charlotte and third in Rochester. In Atlanta, funds were distributed equally to park districts, decentralizing decision-making to that level. In Cleveland, a certain amount of funds were set aside for each park before other factors were considered.

Table 2. Distributing Park Equipment and Facilities

A ranking by park administrators of the factors that influence the distribution of expenditures to existing neighborhood parks for facilities and equipment.

	Deficiencies 1.	Replace 2.	Users 3.	Each 4.	Low Income 5.	Size 6.	Equally 7.	Requests 8.	Other 9.
Atlanta	4	3	5	6	8	2	1	7	9
Boston		3	2	6	5	4		1	7 (professional judgments)
Charlotte	2	1		3		4			
Cleveland		2	4	1		3	5		6
Fairfax County	5	4				3		1	2 (equal to each legislative district)
Hartford	1	2	3	4	6	8		7	5 (staff assessment)
Pittsburgh	7	1	6	2	5	4		3	
Richmond	1	2		4	5		3	6	
Rochester	3	1	6	4	5			2	7 (availability of outside funding)

Key: 1. Correct deficiencies from standards 2. Replace or repair deteriorated items 3. User rates 4. Some for each park 5. Low income 6. Park size 7. Equally to park districts 8. Requests and complaints 9. Other

None of these cities rely upon need as equity as the most important consideration in distributional decision-making. Parks in low-income neighborhoods do not receive more expenditures for facilities and equipment. Greater need for recreational services on the part of low-income groups does not determine resource distribution.

Are some neighborhoods less likely than others to complain about and make requests for recreational services?

In five communities— Charlotte, Cleveland, Fairfax, Pittsburgh, and Richmond— parks administrators maintain that low-income individuals are less likely to express their preferences about neighborhood parks. However, administrators in each city also maintain that citizen preferences for recreational services are actively solicited through survey questionnaires and meetings with community groups.

Decision Rules for the Location of New Parks

Several decision rules could be used to influence the location of new parks. Administrators seem to balance a number of these rules, using a number of different combinations.

1. A maximum distance standard is one important factor in determining new park locations. The objective is to have no residences more than some specified distance from the nearest neighborhood park.

2. An acreage and density factor is used to decide the location of new neighborhood parks. A standard of X acres per 1,000 residents is used. Neighborhoods are ranked from most to least deficient in park acreage and the most deficient neighborhood receives first priority.

3. Low-income neighborhoods are given priority because residents of these neighborhoods have a greater need for public recreation.

4. Neighborhoods with high rates of use of existing parks are given extra consideration.

5. Citizen requests are important in determining new neighborhood park locations. If residents have been vocal in seeking a new park, their neighborhood may be given favorable consideration even if the area has sufficient park acreage based on other criteria.

6. Sparsely populated parts of the jurisdiction often are given priority when decisions about park location are made. This occurs because these are often areas of future growth and land suitable for parks can be purchased at more reasonable prices than elsewhere.

7. Geographic balance is important in proposing locations for new neighborhood parks. The council, or board, that must approve development of new parks may prefer that proposed new parks be distributed around the jurisdiction, even to parts of the jurisdiction that are not deficient in park acreage based on other criteria.

8. The decision where to locate a new neighborhood park is often beyond the control of the parks department. Parks often are located on land that has been donated to the city. In other cases, land suitable for a public park is not available in some parts of the jurisdiction.

The use that is made of these rules is summarized in Table 3. The most important rules for locating new parks in the communities studied are the maximum distance, acreage and density, and citizen request rules. Citizen requests are the most important factor in park location in Boston, Fairfax, and Pittsburgh. Maximum distance ranks first in Atlanta, Charlotte, and Rochester, and second in Richmond. The acreage and density rule ranks first in Hartford and Richmond, and second in four other jurisdictions. The citizen request rule is based on demand as equity. The maximum distance and acreage and density rules incorporate equality as equity.

Availability of land suitable for the location of a new park is also a consideration in several cities. The Director of Parks and Recreation in Richmond noted that areas of high density which "need" parks often don't have available space. Parks administrators in Charlotte mentioned that some sites that qualify on the basis of criteria such as maximum distance and acreage and density are not suitable because barriers (freeways, railroad tracks) inhibit access. There is another factor that affects park location. Until 1969, 98 percent of parkland in Charlotte was donated to the city. Availability of donated land is a consideration in decisions about where to locate new parks in six of the nine jurisdictions studied.

Low-income neighborhoods do not receive priority in decisions about where to locate new parks. Need as equity plays no role in the distributional process in five of the nine jurisdictions. In Charlotte the low-income rule ranks third, in Boston and Cleveland it ranks fourth, and in Pittsburgh it ranks fifth.

Decision rules for park location differ from the rules followed to decide upon the location of branch libraries. Several cities also rely on the maximum distance rule to locate library branches. However, in Charlotte, Hartford, Houston, and Richmond, the distance rule is not uniformly applied in all neighborhoods. The service areas for libraries located in low-income neighborhoods are smaller than they are for branches located in wealthier neighborhoods. Low-income citizens have to travel a shorter distance to reach the nearest branch. For parks, the maximum distance rule is uniformly applied among neighborhoods. Low-income residents do not receive extra consideration. Citizen requests play a more important role in decisions about the location of new parks than they do in decisions about the location of branch libraries.

Parks is an example of a service whose distribution may be substantially influenced by the historical development of a community. In communities where park land was rarely acquired by any method other than private donations, public policy had little direct influence on park distribution. Deprivations may occur for reasons other than overt public policymaking consequences.

Table 3. Locating New Neighborhood Parks

A ranking by park administrators of the factors that influence neighborhood park location decisions.

	Distance 1.	Density 2.	Income 3.	Use 4.	Requests 5.	Sparsely 6.	Council 7.	Donated 8.	Other 9.
Atlanta	1				2	4	5	3	
Boston			4		1		3	2	
Charlotte	1	2	3		5			6	4
Cleveland			4	3	2	6	1	5	
Fairfax County	4	2			1		5	3	
Hartford	3	1		2	6				4, 5
Pittsburgh	3	2	5	6	1		4		
Richmond	2	1			3	5		4	
Rochester	1	2			3		4		5

Key: 1. Maximum distance standard 2. Acreage and density 3. Income 4. Use 5. Requests 6. Sparsely population parts 7. Council prefers balance 8. Land donated 9. Other

Development history may be even more important with some other services. Streets and sidewalks, water and sewer lines, and other aspects of a community's physical infrastructure, are likely to be provided by developers of residential areas and included within the cost of the houses they sell. During the years that this policy has been in effect, neighborhoods developed in that way are likely to have a similar supply of many services. Neighborhoods developed in earlier periods may be deficient in various ways in their physical infrastructure. Policymakers are faced with difficult choices in these instances. Providing these services from general tax sources may be viewed as unfair to residents of neighborhoods where such services were included in the cost of the residences. The absence of adequate services likewise may be viewed as unfair. Similar problems may occur as a result of annexing territory. Development requirements often are different in neighboring jurisdictions. Inequalities often will be inherited in the process of annexation.

Distributional Consequences of Decision Rules

The distributional effects of decision rules can be illustrated by analyzing a series of rules that could be used to distribute police services.

The following rules could be balanced to distribute urban police services.

1. Police patrolmen are partially assigned on the basis of population, so that each district has at least X patrolmen per 1,000 residents.

2. Patrolmen are partially assigned on the basis of total reported crime rates. If a district accounts for 10 percent of the total reported crime in the city, it receives approximately 10 percent of available manpower.

3. Police manpower is partially assigned on the basis of total calls for service. The higher the total number of calls for service in a district or beat, the more manpower it receives.

4. All calls for police service are responded to.

5. Police investigators are partially assigned to districts on the basis of population so that each police district has at least X investigators per 1,000 residents.

6. Police investigators are partially assigned on the basis of total reported crime rates.

Each of these decision rules has distributional consequences. This set of rules incorporates three different conceptions of equity. Rules 1 and 5 (population) emphasize equality as equity, rules 2 and 6 (reported crime) employ need as equity, and rules 3 and 4 (calls for service) rely on demand as equity. If rules 1 and 5 (population) are used to guide the allocation of resources, every district and beat will receive the same number of patrolmen and investigators per 1,000 residents. The variation in crime rates and calls for service will have little effect on the distribution of police manpower. However, crime rates and requests for service do vary among districts and beats. If equality per capita is used to deploy manpower, high crime areas will receive no more resources than low crime districts. Consequently, patrolmen assigned to high crime areas will have less time to engage in preventive patrol.

Demand as equity also has distributional consequences. Rule 3 requires that manpower be assigned on the basis of total calls for service. Police services are provided to areas that request them. The rule affects who gets what because some areas make more requests for police assistance than others. Although many calls are made to report a crime, some calls for police assistance may have little to do with criminal behavior. Instead, these contacts may deal with requests for information or minor traffic accidents.

Rule 4 (all calls are responded to) also has distributional consequences. If all calls, both routine and priority, are responded to, a significant portion of the patrol officer's time will be required to deal with a variety of relatively minor requests for police assistance. Consequently, priority calls, serious crimes, and the preventive patrol function will receive less attention than they would if non-serious calls were ignored.

Rules 2 and 6 (total reported crime rates) will have consequences for the distribution of manpower that differ from the rules discussed above. Since some districts have more crime than others, these districts will receive more manpower than they would under equality as equity. High crime areas also may not be the same areas that generate a large number of calls for assistance. Therefore, neighborhoods with a high level of total reported crime may receive more manpower under need as equity (total crimes) than they would under demand as equity (total calls).

An alternative set of decision rules could be:

1. Police manpower is partially assigned on the basis of total actual crime rates (victimization rates).

2. Police manpower is partially assigned on the basis of a weighting scheme. The number of serious personal and property crimes are considered more important than the number of total crimes.

3. Assignment of investigators is influenced by the number of actual serious personal and property crimes.

Rules 1, 2, 3 emphasize need as equity as opposed to equality, demand, and need as equity in the first set of rules. The distributional consequences of these rules differ from the effects of the first group of decision rules. Rule 1 assigns police manpower on the basis of total actual crimes determined with a victimization survey in which citizens are asked if they have been crime victims. Districts and beats with a high level of actual crimes are assigned more patrol officers and investigators. In general, reported crime rates seriously underestimate the actual incidence of criminal behavior. In addition, some individuals (the young, in particular) are less likely to report crimes than others.[16]

In 1975, Charlotte, N.C., conducted a victimization survey in order to determine the actual incidence of crime.[17] The survey showed that the actual rate of crime in the city was twice as high as the official rate. Eight of the 10 police areas in the city experienced actual rates of crime from two to four times higher than the official rate.

Rule 2 in the second set of decision rules (manpower is assigned on the basis of the number of serious personal and property offenses) also will have distributional consequences that differ from the other rules discussed. The distribution of total crimes, which includes a variety of minor crimes, may differ from the geographic distribution of serious crimes.[18]

Distributional Consequences of Library Decision Rules

A better understanding can be gained of the possible distributional implications of library decision rules by examining several rules that could be used to distribute library services. Suppose the following rules were employed:

1. Library resources (books, newspapers, periodicals, staff personnel, equipment, facilities) should be distributed among branch libraries on the basis of circulation rates. That is, branch libraries with high use levels receive more resources.

2. In general, the same types of books, materials, programs, facilities, and equipment should be provided in each branch library. The reading preferences of high use branches serve as a guide to the types of books and materials to provide in each library.

3. A maximum distance rule determines the location of new branch libraries. No citizen should have to travel more than X miles in order to reach a public library. This goal determines the location of new branches.

Each of these decision rules will have distributional consequences. Rule 1 tends to penalize branches located in low-income neighborhoods since residents of these areas read less. Rule 2 also works to the disadvantage of poor neighborhoods, since high circulation branches determine the types of books, materials, and programs that will be provided in each library. Since a failure to respond to the reading preferences of low-income citizens may have an impact upon the extent to which these individuals use library services, rule 2 reinforces the distributional consequences of rule 1.

Rule 3 also affects who gets what. Some citizens are less mobile than wealthier individuals. Therefore, the use of an equal distance rule is more likely to present a barrier to accessibility to library services for blacks, young children, the elderly, and the poor than to other people.

Other rules for the distribution of library services are also plausible. These include:

1. Resources should be distributed on an equal basis. That is, the same number of books, materials, programs, and facilities should be provided per 1,000 people.

2. Preferences for library services should be systematically and periodically determined through sample surveys of residents and the types of books, equipment, programs, materials, and activities provided in each branch library should be responsive to the variation in neighborhood preferences.

3. Accessibility to library services should favor low-income neighborhoods because these groups are less mobile, because use drops rapidly with distance, and because patrons of libraries in ghetto areas are often young children.

4. A major advertising and outreach campaign should be conducted in minority and low-income neighborhoods in an effort to stimulate use of library services.

Each of these rules will have consequences that differ from the outcomes of the rules previously discussed. Rule 1 (equality per capita) provides an equal distribution of resources regardless of differences in circulation rates. Rule 2 (surveys of citizen preferences) and rule 4 (advertising and outreach campaigns) may lead to greater use of library services by minorities and the poor. Rule 3 recognizes that low-income groups have limited access to private library and other educational services and facilities and that the public sector has a responsibility to counteract the disparities in resources and opportunities produced by the operation of the private sector.

Conclusion

Decision rules have distributional consequences.[18] They affect who gets what. Because decision rules tend to rely on technical-rational criteria (crime rates, calls for service, user levels, professional standards, circulation rates), generalists may not be aware of their operation.

Decision rules incorporate conceptions of equity. Some rely upon equality, others upon need, and still others upon demand. Careful analysis is needed to determine the conception of equity implied in the rule. Geographic analysis is also required to determine the impact that a particular rule or set of rules has upon the distribution of services among neighborhoods.

Some distributional issues can be addressed best by government generalists. Generalists can best determine whether low-income neighborhoods should receive extra consideration in distributional decision-making. Whether user rates or citizen complaints should guide service distribution is a political question and should properly be decided by elected officials and generalist administrators. Distributional analysis on a geographic basis can provide information about the impact that decision rules have on the pattern of service distribution. Analysis is required to determine which rules result in a differential pattern of distribution. This information can be used by generalists to evaluate the decision rules in operation, examine their consequences, and make changes in them.

FOOTNOTES

1. Frank S. Levy, Arnold J. Meltsner, and Aaron Wildavsky, *Urban Outcomes*, (Berkeley: University of California Press, 1974).

2. Graham T. Allison, *Essence of Decision*, (Boston: Little, Brown, and Company, 1971), p. 81. Also see Phillip Selznick, *Leadership in Administration*, (Evanston: Row Peterson, 1957), pp. 29-64, and Herbert Simon, *The New Science of Management Decision*, (New York: Harper & Row, 1960), pp. 5-6.

3. Allison, *op. cit.*, pp. 76-77.

4. Herbert Simon, *Administrative Behavior*,(New York: Macmillan & Company, 1961), pp. 88-89.

5. C. Perrow, *Complex Organizations*, (Glenview: Scott, Foreman, 1972), p. 31.

6. *Ibid*., p. 29.

7. Allison, *op. cit.*, p. 83.

8. Richard Cyert and James March, *A Behavioral Theory of the Firm*, (Englewood Cliffs: Prentice-Hall, 1963), p. 106.

9. *Ibid*., p. 110.

10. Perrow, *op. cit.*, p. 27.

11. Simon, *op. cit.*, 1961, p. 178.

12. Levy, et al., *op. cit.*

13. W.J. Murin, *Mass Transit Policy Planning*, (Lexington, Mass.: D.C. Heath, 1971), p. 97.

14. Herbert Simon, "Changing Theory and Practice of Public Administration," in J.A. Uvenges, Jr., ed., *The Dimensions of Public Administration*, (Boston: Holbrook, 1975), p. 44.

15. With the exception of Oakland, information on the decision rules used in various cities to distribute police, parks, and library services was gathered by the authors. Data on library decision rules in Oakland were obtained from Levy, et al, *op. cit.*

16. Blacks are not less likely to report crime than whites. Nationally, blacks report 45 percent of all their experiences with personal crimes while whites report 44 percent. However, young people are considerably less likely to report crime than older citizens. Youths between the ages of 12-19 reported only 31.5 percent of the personal crimes committed against them in 1973. See Wesley G. Skogan, "Citizen Reporting of Crime: Some National Panel Data," 13 *Criminology*, (February, 1976), 535-49.

17. An Evaluation of Selected Aspects of Police Services (City of Charlotte, North Carolina: Budget and Evaluation Department, 1976).

18. Kenneth R. Mladenka and Kim Quaile Hill, "A Reexamination of the Etiology of Urban Crime," 13 Criminology (February, 1976), 491-506.

19. For a discussion of the role of decision rules in distributional decision-making, see Robert L. Lineberry, Equality and Urban Policy (Beverly Hills: Sage, 1977); Levy, et al, op. cit.; Kenneth R. Mladenka, "Organizational Rules, Service Equality, and Distributional Decisions in Urban Politics," Social Science Quarterly (Forthcoming); and Kenneth R. Mladenka and Kim Quaile Hill, "The Distribution of Urban Police Services," Journal of Politics (Forthcoming).

Questions for Self-Evaluation

1. What are decision rules?

2. What is the relationship between decision rules and conceptions of equity?

3. What are some examples of decision rules used in cities for police, libraries, and parks?

4. What are several alternative decision rules for assigning police patrolmen and investigators? Who would tend to benefit from the use of each alternative?

5. What are several alternative decision rules for the distribution of library resources to branch libraries? Who would tend to benefit from the use of each alternative?

6. What are several alternative decision rules for the distribution of park resources? Who would tend to benefit from the use of each alternative?

7. Develop alternative decision rules for some other service and analyze who would tend to benefit from their application.

CHAPTER 4. METHODOLOGY FOR ANALYZING URBAN SERVICE DISTRIBUTION

In this chapter we will discuss methods of measuring the distribution of urban public services. Categories of analysis will be suggested. Data will be classified as indicators of resources, activities, results, and impacts. Services to be analyzed also will be placed in categories. Specific indicators for each service, in each service category, will be presented. Consideration will be given to interpretation of combinations of these indicators for a given service, including consideration of how these indicators can be used to identify the conception of equity which seems to be reflected implicitly in the data. Methods for arraying these indicators geographically will be presented, and some problems of selecting appropriate geographic units of analysis will be discussed.

This chapter should help develop an ability to analyze a service systematically, from its beginning as resources to deliver it are mustered, through the activities by which it is delivered, to the results that are achieved by delivering the service, and the impacts on societal conditions that occur because the service has been delivered.

Skill in selecting specific indicators is an important objective. Creative imagination in generating possible indicators for use in analysis is needed. The most important indicators and the most feasible indicators to work with in a particular situation should be selected. Indicators relevant to measuring achievement of service objectives should be chosen. It is crucially important to use indicators of results to analyze achievement of objectives. Categories in the service delivery framework--resources, activities, results, and impacts--should be related to conceptions of equity. There are similarities among types of services. Different problems are encountered in analyzing service distribution of each type--routine, protection, developmental, and social minimum. For each type of service, different problems will arise in selecting appropriate geographic units of analysis and the most relevant indicators of socio-economic conditions.

Categories of Analysis

The first problem that an analyst confronts is how to measure services. Indicators must be selected. These indicators should be related to the objectives that the service is intended to meet.

Services have more than one objective. For example, one way of describing the objectives of fire services is: Fire services are intended to reduce the occurrence and severity of fires through inspection and public education and to suppress the fires that do occur with as little property loss and as few deaths and injuries as possible. Indicators will be needed that are relevant to measuring suppression and prevention. Both injuries and property damage need to be accounted for. A number of indicators will be needed to cover all the objectives.

Each service has one or more social conditions to which it is applied. Some of these conditions should be referred to in the statement of service objectives. With fire services, the social conditions to be dealt with are fires and the physical settings which have varying degrees of risk of catching fire. With police services, the social conditions to be dealt with are crimes reported. Police, of course, perform services other than detecting perpetrators of reported crimes. They direct traffic, intervene in family disputes, regulate public order, and provide a helping hand in a variety of situations. Gathering data for indicators for police services related to each social condition is not practical. Analysis should be focused on the crime fighting effort of police. Social conditions relevant to each service should be identified, and statements of objectives should incorporate some of these social conditions.

A service delivery framework, or model, should be used to help identify specific indicators for each service. The framework we propose has several uses. It directs attention to several stages of the service process. It encourages the analyst to consider the consequences of the service. It stresses performance, in addition to encompassing workload measures. Use of it leads to indicators that can be related to alternative conceptions of equity. This service delivery framework does not make the identification of suitable indicators a simple process, but it does help make the identification process more inclusive.

For every urban service, resources are required. In systems model terms, resources commonly are referred to as inputs. The service delivery framework and its relationship to systems model terms is diagrammed in Figures 1 and 2. Resources are money, personnel, facilities, and equipment. A useful measure of resources often is expenditures--expenditures for replacement of water lines, expenditures for police patrol, expenditures per pupil for education. Of all the indicators to be discussed, resource indicators usually are the easiest to construct. However, expenditures may be difficult to obtain, and substitutes are sometimes used for this reason. For example, instead of police patrol expenditures, analysts will find it easier to identify the number of police assigned to patrol duty. It will be easier to identify the number of teachers per school than the expenditures that are made to employ them. Although multiple measures of resources will be helpful, expenditure measures have the advantage of encompassing most resource components.

FIGURE 1.

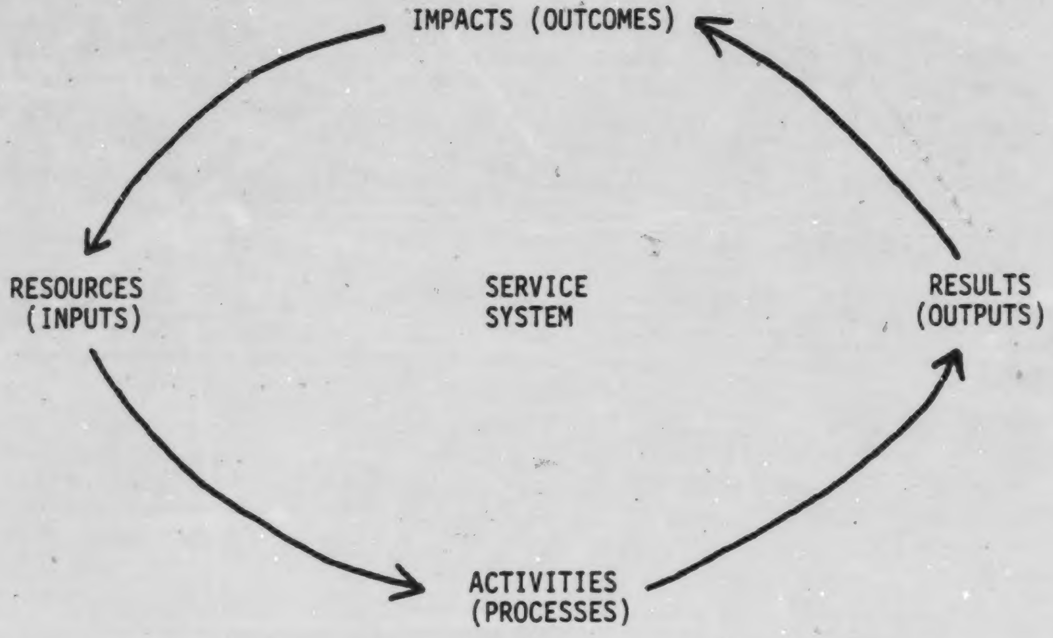
IMPACTS (OUTCOMES)
RESOURCES (INPUTS)
SERVICE SYSTEM
RESULTS (OUTPUTS)
ACTIVITIES (PROCESSES)

Figure 2. Service Analysis Framework

Each service has objectives

involving

Serving population and influencing social conditions

by using

Resources

(expenditures, personnel, facilities, equipment)

and engaging in

Activities

(time frequency and duration)

having

Results

(direct consequences--intended and unintended--and especially use of services--amount, rate, and reasons)

and leading to

Impacts

(changes in social conditions)

The activities of the urban service system are the ways in which the resources are used. Firemen respond to fire alarms and suppress fires, policemen patrol streets and make arrests, sanitation workers collect refuse. These are sometimes referred to as processes in systems terms. These are more difficult to measure than are resources. They involve motion, change, action. They do not stand still. A sound camera can record how a policeman makes an arrest. But an analyst working from police records may be able to do no better than identify the response time (the time from the time the request for service was received until the time the police arrived at the scene). Often even response time is not available. An analyst may be reduced to using time measures, e.g. how frequently was a street patrolled during an 8 p.m. to 4 a.m. police shift, how often was refuse collected, how many hours a week was a branch library open. One may have to retreat so far from identifying the activity itself, that the boundary between activity and resource indicators becomes transluscent. How, for example, is one to use an indicator to identify the content and quality of reading instruction in the public schools. Lacking a sound camera or participant observation, the analyst is likely to have to resort to remote inference, e.g. scores of teachers on verbal tests, years of education of teachers, average class size. One can think of these as resources available in the classroom. But one can also use them as substitutes for activity indicators, inferring that the education of teachers and the size of classes influences the activities directly that occur in class.

Results are what happens as a direct consequence of the service delivery system. Results are essential in measuring the extent to which service objectives are being achieved. How much stolen property has been recovered? How much refuse has been collected? How many people have used the swimming pool? What is the water pressure at the tap? These all measure results of the service. In systems terms, they often are referred to as outputs. Frequently, in the literature, expenditures have been used as substitutes for output indicators because indicators of the type referred to here were not available. This leads to some confusion in terminology. It is another reason why we prefer to use the term results. Results are not always intended. Objectives usually are not achieved completely. Some refuse may be left on the street after collection. Some cases may be cleared by arrest, but the person arrested may sue for false arrest occasionally and win. Thus, analysts should try to include indicators of unintended, as well as of intended, consequences.

It also is important to note that consequences often are not solely, perhaps not even primarily, a result of the effectiveness of the service system. Refuse left on the street may have been spilled by stray dogs. Students scoring high on verbal exams may come from homes where parents are well-educated. Fire losses that occur may result from flammable materials in residences that are now illegal in new dwellings, but which were legal at the time of construction. These causal relationships, of course, should be taken into account when remedial action is considered.

In some instances, opinions may be the closest analysts can come to obtaining information about results of services. For example, the noise generated by refuse collection may be identified best by whether people consider it objectionable. Data on park usage in non-supervised open areas usually will not be gathered by park personnel. People can be asked how often they use particular parks. They also can be asked whether they know of the existence of certain facilities or programs in parks. The rate at which people use parks may be influenced by whether they feel safe when using the park. Their responses will help identify reasons for use and non-use of facilities and programs.

People also can be asked for their general opinion about services. Opinions of citizens can be an indirect result of service characteristics. We use the term "indirect result" because a number of forces may influence opinions about services. These include feelings of trust in government, confidence about being treated fairly, and attitudes toward authority. Administrators may believe a service is being delivered effectively, based on performance indicators such as those referred to earlier. Residents may have a different opinion. Opinions may not be the same in all parts of the jurisdiction. Opinions may be consistent with the performance measures, or they may be inconsistent. Sometimes administratively useful information may be obtained. Such information may be useful in making decisions about priorities among different services, where to invest resources geographically for a particular service, and how to modify public information programs. However, when opinion data differs from other data about resources, activities, and results, the objective, non-opinion data, should be emphasized in making decisions. Surveys should be conducted using random sampling methods. A reference on survey methodology should be consulted before the survey is conducted.

Table 1. Examples of Service Indicators

Data for specific indicators of resources, activities, results, and impacts are obtained by gathering field data about services and facilities and by conducting surveys of citizens.

Resources	Expenditures ($ per 10,000 population, $ per phenomenon, such as $ per serious crimes)
	Personnel (number per 10,000 population, number per phenomenon, such as number per serious crimes)
	Equipment (playground swings per 100 children 12 and under)
	Facilities (neighborhood park acres per 1000 population)

Table 1. Examples of Service Indicators

Activities	Frequency (refuse pick-ups per week, hours branch library open per week)
	Duration (response time for police, or fire, from receipt of call for service to arrival on scene)
Results	Intended consequences (arrests per 100 serious crimes reported, street cleanliness rating after refuse collection, water pressure at the tap)
	Unintended consequences (number of missed refuse collections per week per 100 households, complaints about unnecessary use of force by police per 100 arrests for serious crimes)
	Use of services by amount (number of branch library books circulated per year, number of swimmers per day, number of park users per week)
	Use of services by rate (number of branch library books circulated per year per population in service area, number of mass transit riders per day per population in service area)
	Use of services by reasons (percentage of persons not using a park because of anxiety about their personal safety when using the park, percentage of persons not using mass transit for the journey to work because the relationship between transit and work schedules requires waits of 15 minutes or more)
Impacts	Changes in social conditions (measurable with experimentation or elaborate and usually time consuming inferences and analyses. Citizens also can be asked their opinions about the satisfactoriness of services in their neighborhood in comparison with other neighborhoods. The operational usefulness of these opinions is questionable.)

The *impact* of a service can be defined as the difference between results given the existence of the service and conditions that would exist in the absence of the service. This difference is very difficult to identify. What would the crime rate be if there were no police? What health hazards would exist in cities if there were no refuse collection? How would property values change if there were no public fire protection? Where would people choose to live if some places had public schools and others did not?

It is apparent when one talks about the contrast between the presence and absence of a service that the impact of the service probably is very great, although we would have difficulty estimating it accurately. But what is the impact on the crime rate of a five percent increase in the police force? How many people will change their moving decisions because of a five percent increase in education expenditures per pupil? How will voting behavior be influenced by reducing refuse left on the street by five percent? An uncommon wizardry is needed to divine accurate answers to these puzzles. In some instances, estimates can be made of certain kinds of impacts. If a residence has no public fire protection, or is greater than some specified distance from a fire hydrant, these deficiencies will be reflected in the payment of higher rates for fire insurance. They also will be reflected in property values. Calculations can be made, based on some reasonable assumptions, about how fire protection deficiencies impact the value of residences. In most instances, however, these calculations either will not be possible, will not be practical, or will not yield information that can be put to use.

The best way of identifying service impacts is by experimentation. Experimentation involves comparison between two or more situations differing, ideally, only in the procedure that is applied to them. The difference might be the presence or absence of police patrol. It might be an increase of 25 percent of police patrol in one place with no increase in another place. It might involve different activities by the same number of police in different locations. Measurements are taken of relevant indicators before the experiment, preferably several times over a substantial period, and after the introduction of the new procedure, again preferably several times. The aim of the experiment is to identify differences in the measurements and to be able to relate these differences to the change in the experimental variables. Isolating differences is difficult in the real world, because two or more situations never are identical in all respects other than the experimental variables. Nor do situations hold still. As time passes, conditions change, other than the experimental conditions. Therefore, identifying the new procedure as the cause of changes measured cannot be done with certainty. The experimental method is, however, the best method to use for identifying impacts. For the purposes described here for analyzing service distribution, the experimental method will be too complicated and expensive, except for high priority projects.[2] For this reason, service distribution analysis should rely on indicators of resources, activities, and results.

One important methodological issue concerns the appropriateness of the indicators selected to measure service distribution. The indicators suggested in this chapter can be used to measure service effectiveness. Many of them have been used for effectiveness analysis in field tests by the Urban Institute and the International City Management Association. One problem with effectiveness indicators is that neither one indicator nor several indicators can completely define all important aspects of any service. This problem is reduced by using several indicators. A second problem is that factors other than the service itself influence the extent to which service objectives are achieved. Non-service aspects of the community often affect the data found for a specific indicator. The seriousness of this problem is reduced in service distribution analysis. Whatever the deficiencies with an indicator, these deficiencies usually will be similar in each part of the jurisdiction. Parts of the jurisdiction still can be compared with each other. Provided that each indicator is relevant to measuring some aspect of a service, the comparisons of each part of the jurisdiction with other parts will be useful.

A third problem is that the relationship of the distribution of one indicator to the distribution of another indicator cannot be predicted accurately, with the present state of knowledge. If you know the distribution of a service, say police, on one indicator, such as response time, you cannot predict what the distribution will be for another indicator, say percent of stolen property recovered. Since resources to gather and analyze data always are limited, analysts should be cautious about reading more into their analyses than is warranted. Fourth, there are reliability problems with some indicators. Crime rates measure the crimes that are reported, rather than all the crimes that are committed. Victimization surveys have revealed that not all crimes are reported. Use data for swimming pools can be gathered readily by counting admissions. The number of users of large parks cannot be counted readily, and probably not accurately even with considerable effort, because of the size of the park, the ability to enter from many points, and usually, the absence of an admission fee.

These methodological problems are cause for caution against reading too many conclusions into too few facts.

Operationalizing Conceptions of Equity

Each category of analysis— resources, activities, results, and impacts— can be used to measure the pattern of service distribution in a jurisdiction. The service distribution may not be the same for each of the different categories of analysis. For example, the resources invested in police patrol might be unequally distributed per capita, with high crime areas receiving more services, perhaps in proportion to the crime rate. The activities of patrolmen, as measured by response time, might be distributed rather equally. Would that mean results as measured by percentage of stolen property recovered would be distributed equally? Not necessarily. What of the rate at which property is stolen— in terms of robberies, burglaries, and larcenies per 1,000 people? Probably the high crime area that was assigned police patrolmen proportionate to its crime rate still would retain its designation as a high crime area thereafter. For park services,resources, as measured by acres of community-serving parkland, might be distributed so that every neighborhood met or surpassed an accepted standard, such as five, or eight, or ten, acres per 1,000 persons. In addition to variation in park acreage above the accepted standard, there might be additional variation in activities, such as number of hours of supervised playground recreation, number of hours of swimming, and so on, whether due to variation in personnel expenditures or to variation in availability of these resources. Results might vary as well. Usage could be greater in areas having less park acreage and fewer hours of specialized services, perhaps due to persons there having fewer recreation options.

Equity concepts should be related to categories of indicators (resources, activities, and results) for analyzing service distribution patterns. Service distribution refers here to the geographic pattern. Equity concepts often apply to individuals. Analytical methods may describe services distributed to individuals. In practice, however, many services are delivered to areas— parks, branch libraries, public transit, and fire stations, to blocks— streets, street lights, and sidewalks, and to those who request services— police and fire services. Therefore, geographic analysis is the only practical way of analyzing many of these services. Considerations of cost reinforce the practicality of geographic analysis. Indicators of need, such as income data, can be used to supplement population, household, age, and racial data for describing geographic areas. Techniques for describing geographic areas for analytic purposes are discussed later in this chapter.

Five conceptions of equity were analyzed in Chapter 2. These are equity based on equality, need, demand, preference, and willingness-to-pay. The categories of analysis (resources, activities, and results) described here can be used to give concrete meaning to these equity concepts. The importance of making equity concepts concrete can be illustrated with equity as equality. Equity as equality could mean that equal resources per capita should be provided. For parks, this could mean that each neighborhood should receive the same number of acres of community— serving parkland per 1,000 persons. For police, it could mean that patrolmen should be distributed so that each neighborhood receives the same number of patrolmen per 1,000 residents. Equity as equality also could mean that equal activities per capita should be provided. For parks, this could mean that each neighborhood should receive the same number of hours of supervised summer playground recreation per 1,000 residents. For police, it could mean that response time should be approximately equal in each neighborhood. Equity as equality also could mean that equal results per capita should be provided. For parks, this could mean that persons in each neighborhood should be equally satisfied with the safety, maintenance, and facilities in their neighborhood parks. For police, it could mean that clearance rates for burglaries and robberies are equal, or within a small range of variation, in each police precinct. There are a number of indicators of resources, activities, and results that can be used to analyze each service. Each equity concept (equality, need, demand, preference, and willingness-to-pay) needs to be operationalized in terms of these analytical categories.

These categories of indicators provide a means for administrators to compare their concepts of equity with the service distribution pattern as it exists. Analysis and interpretation of these indicators can be included in the decision-making process as changes in departmental procedures, programs, operating budgets, and capital expenditures are considered.

Categories of Services and Indicators of Distribution

Each service should be analyzed separately. Indicators need to be selected which are appropriate to each service. There are similarities among some services which make it useful to categorize them to simplify discussion. The use of categories should not be interpreted to mean that each member of that category is identical to each other member. There is no simple formula that enables analysts to select the same indicators for each service in the category. There are enough similarities among members of the categories, however, to obtain guidance in thinking about indicators to use. In this section, urban services are placed in four categories: routine, protection, developmental, and social minimum. Each category will be discussed below. Lists of indicators will be presented for each service. Some of these indicators will be discussed to illuatrate why they were chosen, and why other possible indicators were left off the list. The social minimum category of services will not be discussed at as great length as the other service categories because of the special difficulties of analyzing these services.

Routine Services

Routine services are those services used on most days by most people. These services include solid waste collection and disposal, water supply, sewage collection and disposal, and transportation (including streets, bridges, sidewalks, street lights, and some mass transit). Each of these services has been, and still is, provided by private enterprise. The role of the public sector has grown each decade, so that now the public sector dominates in providing these services. The distinguishing feature of these services is the routine and almost inevitable nature of their use. Nearly everyone, regardless of age, sex, and social status, uses these services, directly or indirectly, frequently, and usually daily.

Most of these services also are characterized by an important, usually dominant role for physical facilities and equipment rather than for personnel. This influences the selection of indicators. Residents and government officials have a strong interest in the presence, or absence, of the physical facilities or item of equipment. Is there public water supply or not? Sewers or not? Paved streets or not? Sidewalks or not? Street lights or not? A bus within walking distance or not? When the presence or absence of facilities can be identified clearly, distributional analysis is relatively easy.

As these examples suggest, the analysis of some of these services relies considerably on indicators of resources. Some indicators to use in analyzing distribution of routine services are listed in Tables 2, 3, and 4. Percentage indicators aid geographic comparison.

Table 2. Water Supply Indicators

Objectives: Provide a reliable supply of water that is adequate for household, commercial, and industrial use, aesthetically acceptable, and free of health hazards.

Indicators by measurement category	Data collection source and procedure
Resources	Water Department records
Percent dwelling units with public water supply per service district	
Expenditures for new water lines per 1000 dwelling units	
Expenditures for replacement, repair, and maintenance of water lines per 1000 dwelling units	
Average annual expenditures last five years for new water lines (and separately for replacement, repair, and maintenance of water lines)	
Results	Water Department records and citizen survey
Average water pressure at the tap per service district	Measure for a random sample of dwelling units
Water quality at the tap (taste, odor, color, purity) per service district	Citizen survey of random sample of dwelling units
Time without water service per service district	Department records

Table 3. Solid Waste Collection Indicators

Objectives: Promote cleanliness, health, and safety of the community by removing garbage and trash while minimizing inconvenience to citizens.

Indicators by measurement category	Data collection source and procedure
Resources	Sanitation department records
Expenditures per ton collected per route	Expend./tons

Indicators by measurement category	Data collection source and procedure
Expenditures per route mile	Expend./Miles
Expenditures per capita per route	Expend./persons
Activities	Sanitation department records
Frequency of regular collection	Statement if uniform, map if variable
Location of regular collection (curb, side of dwelling)	Statement if uniform, map if variable
Frequency of bulk refuse collection	Statement if uniform, map if variable
Frequency of street cleaning	Statement if uniform, map if variable
Results	Sanitation department records
Street cleanliness (refuse left after collection)	Sanitation department records Visual inspection or photo rating data by block gathered by sanitation department.
Pounds of garbage collected per route	Sanitation department records
Resident satisfaction with service (This can include specific aspects, such as street appearance, noise, odors, missed collections, damage to containers, health and fire hazards)	Responses to question on garbage and trash collection included in a general survey of resident opinions on local government services.
Missed collections	Sanitation department records. Supervisor survey and resident complaints.
Complaints about service.	Sanitation department and/or complaint department records.

Table 4. Street Indicators

Objectives: Provide access for motorists, bicyclists, and pedestrians to and from their destinations that is convenient, smooth, and safe.

Indicators by measurement category	Data collection source and procedure
Resources	Department Records
Percent of streets paved per service district	
Expenditures for paving new streets per 1000 dwelling units[1]	
Expenditures for resurfacing and repair of streets per 1000 dwelling units	
Average annual expenditures last five years for paving new streets (and separately for resurfacing and repair of streets) per 1000 dwelling units	
Percent of streets resurfaced last five years per service district	
Expenditures for grading of unpaved streets per 1000 dwelling units	
Percent of streets with sidewalks on at least one side per service district	
Percent of major street miles with bicycle lanes per service district	
Average distance between street lights per service district	
Results	Department Records
Smoothness of streets per block and per service district	Roughometer, blindfolded inspection, or visual inspection
Motor vehicle (bicycle and pedestrian) traffic per block and service district	Traffic counts
Illumination after dark at street level per block and service district	Field observations

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[1] All expenditure items also should be related to traffic volume.

What percentage of the street mileage in a neighborhood is paved? What percentage of tne dwelling units have sewer connections? These data usually will be available from engineering maps. It will be relatively simple to compare these data using a variety of boundaries--census tracts, neighborhoods, wards, service districts. Because of the capital intensive nature of most of these services, service districts (for maintenance and installation) are likely to be larger than for other services. In small and medium size jurisdictions, service districts may not be used at all. On the other hand, refuse collection, as a less capital intensive service, may have smaller service districts. Information also can be obtained easily for individual blocks, so that it can be observed whether deficiencies are isolated or cumulative.

Expenditure data provide the second main method of analyzing these services. These indicators concern how much is spent (in the most recent fiscal year, or the annual average for the most recent five years) for new water lines, for replacement and repair of existing water lines, and the like. These data may be difficult to obtain. Furthermore, in some situations, they may not be helpful. If an area has not been the location of expenditures for water lines during the previous year or five years, this may be of little consequence if the area has water lines that are functioning adequately. On the other hand, if the area lacks adequate water service, and expenditures have been made in other areas where water service is adequate, then this is a matter of concern. In practice, therefore, it may be appropriate to discover problem areas first, by determining the presence or absence of adequate facilities and equipment and by studying indicators of results, to be discussed below. Thereafter, expenditure analysis could be attempted for those areas that lack adequate facilities and equipment in comparison with jurisdiction-wide norms. The important thing to do will be to schedule expenditures for areas lacking adequate facilities and equipment.

Activity indicators are not important for most of these services. We are not concerned with the water flowing through the distribution line. We are interested in the water pressure at the tap, at which point we consider the pressure an indicator of the result of water supply. We are not concerned with operation and maintenance practices; we are concerned with the time residents are without water service because of faulty water supply. Again we treat this as a result indicator, an unintended result.

Activities are difficult to measure. An activity implies that people are doing something. It involves a process, an interaction. It needs to be recorded, observed, commented on in narrative. Therefore, activities are difficult to reduce to simple indicators. Activity indicators that are simple enough for use by administrators usually are pale reflections of the phenomena administrators would like to measure. Instead of the activity itself, administrators are likely to need to measure the time (and place) in which it occurs. In the case of routine services, this will be relevant for services with a substantial personnel component, such as refuse collection, street cleaning, and bus service. The indicators, as shown in Table 1, will be of the frequency (and location and time of day) of refuse collection, the frequency of street cleaning, and the frequency of bus service. Frequency indicators do not apply to streets, water, sewers, and sidewalks, because these facilities are intended to be available at all times.

Result indicators measure some consequence, intended or unintended, of the service. With water supply, water pressure and quality (taste, odor, color, purity) indicate the result of the service. The location of a test batch of water on a scale of acceptable and unacceptable pressure and quality indicates whether intended or unintended results have been achieved. The time without water service is another indicator of an unintended result. With streets, two indicators of results are the smoothness of the ride and the volume of traffic. These indicators, together, are useful indicators of need for the service, as well as of results of previous service provision. If a particular street with the greatest use also is the street with the bumpiest ride, its potential claim on resurfacing and repair funds is apparent. This is one of the general uses of result indicators. They measure the consequences of previous service. At the same time, they indicate need for future services. This indication of need, of course, requires interpretation. Interpretation includes justification in comparison with competing needs. These measures are not as straightforward as they may seem. Impressions of street smoothness vary with the observer. Smoothness can be measured by visual observation, by blindfolded evaluators recording their impressions of bumps, and by machines called roughometers. Some tests have indicated that man and machine observations are not highly correlated. Nor are there high correlations between the impressions of different human observers. At a minimum this suggests that reliance on a single observer may produce decisions on expenditure priorities of questionable validity. Traffic volume also has ramifications. High usage may reflect the absence of acceptable options. High usage also may be generated from outside the jurisdiction rather than from within it. Thus, administrators will need to interpret the importance of traffic volume in the context of travel alternatives and the source (and destination) of the traffic.

Some opinion indicators for routine services, as with other services, may be of practical use. In some instances, opinion indicators may be of special importance. Water taste and odor, for example, is in the eyes (or mouth and nose) of the beholder. Smoothness of streets, as we have seen, is impressionistic. Noise occurring during garbage collection can be measured by sound equipment, but whether noise is objectionable or not depends upon whether it is heard and whether the listeners object to it.

Opinion indicators also need interpretation. Suppose, for example, that resident satisfaction with water, sewers, streets, and refuse collection is much lower in one neighborhood than in other neighborhoods. How should this be interpreted, if the indicators of resources and results seem to describe a service pattern contrary to the resident's opinions? One interpretation would be that their expectations are higher than those of people in other neighborhoods; therefore, they are less satisfied even though they receive better services. Another interpretation would be that they are disaffected from government, in general, expect to receive inferior services, and conclude that whatever level of service they receive must be inferior to services received elsewhere. What action should be taken? The problem may be more one of public relations than of service delivery. It could be approached in that way. This possible pattern of findings also suggests that opinion measures used in isolation from performance measures have the potential of leading to questionable conclusions.

Examples

Hypothetical examples of possible findings may help clarify uses of information about routine services by service district. Consider the following pattern for water supply in four service districts within one jurisdiction.

Table 5. Hypothetical Water Indicators

	Districts			
	1	2	3	4
Average expenditures for replacement and repair of water lines last five years/100 dwelling units (resource)	$5,000	$20,000	$20,000	$20,000
Percent dwellings with public water supply (resource)	50	100	100	100
Percent dwellings with water pressure greater than x lbs./sq.in. of those having public water (result)	25	100	100	100
Time without water service of those having public water (in days) (result)	20	2	2	2
Modal response on survey to question about taste of public water at the tap (result)	Poor	Good	Good	Good

In this example, district 1 fares less well than districts 2, 3 and 4 on each measure, which includes representatives of indicators of resources and results. The difference is striking for each indicator. In addition, the data for districts 2, 3, and 4 are identical. District 1 clearly is a prime candidate for receiving additional investment in water supply in coming years. The amount of this investment and its urgency is given greater meaning by having data to analyze and interpret.

Consider a much different pattern for these same indicators.

Table 6. Hypothetical Water Indicators

	Districts			
	1	2	3	4
Average expenditure for replacement and repair of water lines last five years/100 dwelling units (resource)	$5,000	$10,000	$15,000	$15,000
Percent dwellings with public water supply (resource)	100	100	100	100
Percent dwellings with water pressure greater than x lbs./sq.in. of those having public water (result)	75	50	25	100
Time without water service of those having public water (in days) (result)	5	10	20	2
Modal response on survey to question about taste of public water at the tap (result)	Poor	Fair	Fair	Good

These data describe a non-cumulative pattern of water service inadequacy. District 4 shows well on each indicator. District 1 does fairly well on water pressure but worse on taste. Districts 2 and 3 received more expenditures for replacement and repair of water lines than district 1, perhaps because it has more old lines, as reflected in their greater number of days without service, 10 and 20 compared with 5 in district 1. The water source could be different for different districts. This might explain taste variations. Greater filtration may be called for in district 1. Low water pressure in district 3 may call for greater pumping station capacity. It would seem that replacement and repair expenditures in district 4 are high and that other districts should get relatively more in the future. One characteristic of these data is that they are not self-explanatory. They require interpretation by, and additional information from, the administrators of the water system. But they also provide the data to make such explorations meaningful and perhaps to lead to modified decisions. Low water pressure and a substantial number of days without service probably deserve priority.

The remedy might be expensive. Taste problems may be less serious, and perhaps the remedy is less costly. Pending cost analysis, district 3 probably should be first in line for alteration.

Protection Services

Protection services help to maintain public order and to protect persons and property. Among these services are police, fire, courts, corrections, code enforcement, and emergency services. The discussion here will be confined to police and fire. Police and fire services have two functions. One is to prevent the occurrence of undesirable events (violent crimes, property crimes, damage to persons and property from fires)--the preventive function. The second is to suppress the undesirable activity, and, in the case of property crimes, to recover what has been taken--the suppressive function. This involves putting out fires, arresting violators of the law--in the act if possible, and investigating to determine the perpetrator of the crime or the fire. To the extent that the preventive function is successful, the role of the suppressive function is lessened. The preventive function reduces the risk that undesirable events will occur. The suppressive function reduces the damage from these events once they have occurred.

The important characteristic of these services is that people benefit from these services to the extent that risk and damage are reduced. In the case of routine services, people want them available regularly and use them routinely. In the case of developmental services, people want them available to use at their discretion. But with protection services, people hope that they will have no need of these services. This affects the measurement process. More water pressure is considered beneficial. More expenditures for education are considered beneficial. In both instances, it is assumed that better results will follow from greater expenditures. With protection services, especially with police, our confidence in this relationship is not so great. While people in high crime areas certainly want police protection, there is no evidence to suggest that most police activities have any influence on the crime rate. This complicates the interpretation of findings for particular indicators of police services. Because causal relationships are obscure for police services, the task of determining what distribution of police services is equitable becomes more difficult.

Useful indicators of police and fire services are listed in Tables 7 and 8. The list, of course, could be expanded, but those indicators included may be more than most local governments will have the resources to gather data for. Indicators pertinent to both the preventive and suppressive functions are included. The emphasis is on suppression. This probably is appropriate, since suppression usually is emphasized by administrators. A useful modification of this list would be for administrators to add indicators of prevention that are particularly applicable to activities engaged in by their departments.

Table 7. Fire Protection Indicators

Objectives: Reduce the occurrence and severity of fires through inspection and public education and suppress the fires that do occur with as little property loss and as few deaths and injuries as possible.

Indicators by measurement category	Data collection source and procedure
Resources	Department records
Expenditures for fire crews per 1000 dwelling units	
Average expenditures for fire equipment last five years per 1000 dwelling units	
Average fire flow capacity at random points per service district	
Average distance of dwelling units from a fire hydrant per service district	
Expenditures for preventive fire inspections per 1000 dwelling units	
Total expenditures per fire per service district	
Activities	Department records
Average fire response time per service district	Time from receipt of call to arrival at the scene
Percent fire response time greater than x minutes by type of fire per service district	
Results	Department records
Occurrence of serious fires as a percentage of dwelling units inspected in last six months per service district	

Indicators by measurement category	Data collection source and procedure
Occurrence of serious fires as a percentage of dwelling units not receiving fire prevention inspection during preceding six months per service district	Department records
Dollar loss from fires per service district	
Dollar loss as a percentage of damaged structures' value per service district	
Civilian casualties from fires per 10,000 residents per service district	

Table 8. Police Protection Indicators

Objectives: Promote community safety through the apprehension of offenders and the prevention of crime; provide service in a fair, prompt, courteous, and thorough manner.

Indicators by measurement category	Data collection source and procedure
Resources	Department records
Number of patrolmen per 1000 residents per district[1]	
Number of investigators per 1000 residents per district	
Number of patrolmen per 100 total reported crimes per 1000 residents per district	
Number of investigators per 100 total reported crimes per 1000 residents per district	
Activities	Department records
Mean police response time to all calls for service per district	Time from receipt of call for service to arrival at scene

Indicators by measurement category	Data collection source and procedure
Percent of patrol officers' time spent on active patrol per district	
Hours spent investigating criminal incidents for each category of crime per district	
Results	Department records
Number of arrests per 100 total crimes reported	
Number of arrests per 100 serious personal crimes reported per district	
Number of cases cleared per 100 total crimes reported per district[2]	
Number of cases cleared per 100 serious personal crimes reported per district	
Percentage of stolen property recovered per district	Department records
Number of arrests per 100 total actual crimes per district	Victimization survey
Percentage of citizens rating police performance as satisfactory per district	Citizen survey
Impacts	
Total reported and actual crime rate per 1000 residents per district	Department records and victimization survey

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[1] For a more extensive list and discussion of police indicators see Kenneth R. Mladenka and William H. Lucy, Handbook for Analyzing the Distribution of Police Services, (Washington, D.C.: National Training and Development Service, 1978).

[2] The number of cases cleared refers to reported crimes for which a suspect is formally charged and other crimes for which the police believe the suspect is responsible but for which he may not be formally charged.

Resources

Indicators are needed for the prevention and suppression functions. For police, indicators often concentrate, sometimes exclusively, on patrol. These should be related to population (e.g. patrol manpower/1,000 people) and to need (e.g. patrol manpower/10 FBI index reported crimes). Some police departments have adopted complicated formulas for assigning patrolmen. In such cases, manpower should be expressed as well in a form appropriate to the formula. Frequently there are no separate data describing investigation of crimes. This is unfortunate, since it clearly makes a difference to the suppression function how much investigative time is allocated to one district versus others.

Fire protection depends upon personnel, equipment, and availability of water. Water pressure was identified as a result of the water system, when routine services were analyzed. But in the context of fire protection, water pressure is an indicator of a resource for use in suppression. Expenditures for personnel should be distinguished from expenditures for equipment. Since fire equipment has a relatively long life, average expenditures for five years is an appropriate indicator. Expenditures for preventive inspections also should be identified. If the fire department is organized so that inspectors are ready for suppression duty even during inspections, then the same expenditures can be counted twice--once for fire inspection and once for fire crews.

Activities

Measures of time are the principal indicators of activities. Response time--the time elapsed from receipt of a call for service to the arrival of the police or fire crews at the scene--is an important indicator for both services. Fire departments usually record this data. Police departments frequently do not. Police records may reveal nothing closer to response time than the time a call for service was received and the time the patrolmen reported themselves ready for duty again after handling the service request. This is a data gap that police administrators should fill. The frequency of preventive police patrol also is useful, as is the time elapsed from a request for assistance, usually from patrolmen, and the beginning of work by an investigator, in cases in which investigation is warranted. The amount of investigative time for each category of FBI index crimes also is an important indicator.

Results

Indicators of results primarily concern percentages of reported crimes handled in a variety of ways by the police. Perhaps the arrest rate (arrests divided by crimes reported) and the clearance rate (the percentage of crimes cleared by arrest, including crimes police believe were committed by those arrested even if charges against them are not filed due to insufficient evidence) are most basic, in the sense that punishment--and probably some prevention--begins there. Victims of thefts want their goods returned, of course, so that percent stolen property recovered is another useful indicator. Some other indicators involve dilemmas. Good arrests (arrests for which there is solid evidence) are more likely to be prosecuted in the courts and to lead to convictions. Thus, indicators of these can be considered measures of the quality of arrests. At the same time, prosecutors, defense attorneys, judges and, sometimes, probation officers, influence these indicators. Still, they probably are useful, because they help identify differences in arrest quality among precincts, especially where the prosecutor and judge are the same for each precinct.

For fire service, indicators of fire loss are the most fundamental measures of the consequences of the phenomenon they try to prevent. Fire indicators, like police indicators, tend to be negative. They measure unintended consequences, or consequences beyond the control of the service. One way to improve on fire result indicators is to include indicators that relate results to attempts at prevention. Thus, fires can be related to the occurrence of fire prevention inspections within some time span, six months for example, prior to the outbreak of the fire.

Opinions about police service probably are more important than opinions about fire service. Subjective assessment of police conduct has become an important indicator of police success. People are concerned about police courtesy, force used by police, sensitivity by police in asking questions, and thoroughness by police in investigations. Opinions about police behavior, and effectiveness, in one neighborhood in comparison with other neighborhoods also may be a matter of considerable administrative, and political, importance.

Examples

Two conceivable patterns of police distribution are given below. Their symmetry, of course, makes them improbable.

Table 9. Hypothetical Police Indicators

	Districts			
	1	2	3	4
Expenditures police patrol/ 1,000 people (resource)	20	20	20	20
Expenditures for police patrol/ 10 FBI index crimes (resource)	10	80	80	80

	Districts			
	1	2	3	4
Expenditures police investigation/ 1,000 people (resource)	1	5	5	5
Percent crimes reported cleared by arrest (result)	5	30	30	30
Percent stolen property recovered (result)	4	10	10	10

In the pattern above, patrol funds are distributed equally per capita. This has the effect of an unequal distribution per reported crime, indicated by expenditures for police patrol per 10 FBI index crimes. This inequality is repeated, though not at the same ratios, for investigation, clearance rate, and stolen property recovered.

Table 10. Hypothetical Police Indicators

	Districts			
	1	2	3	4
Expenditures police patrol/ 1,000 people (resource)	80	20	20	20
Expenditures for police patrol/ 10 FBI index crimes (resource)	40	40	40	40
Expenditures police investigation/1,000 people (resource)	5	5	5	5
Percent crimes reported cleared by arrest (result)	20	20	20	20
Percent stolen property recovered (result)	10	10	10	10

In the second pattern, equal expenditures are made for each 10 FBI index crimes. This equality persists through the indicators for investigation, clearance rate, and stolen property recovered. It has the effect of unequal expenditures per capita for police patrol.

The difference between a population-based distribution pattern and a pattern based on crimes reported is apparent. Differences in clearance rates and property recovery rates, of course, can vary considerably though expenditures per crime reported may be similar. The complex patterns that may exist in the administrator's world may be difficult to interpret. The accumulation of experience will help interpretation. In the short run, administrators at least will have meaningful data to which to apply their best professional judgment.

Developmental Services

Developmental services are intended to develop the physical, intellectual, and emotional potential of individuals. The services treated here--education, libraries, parks and recreation--are available to nearly everyone, at least during certain periods of their lives. Other services also serve developmental functions. These other services, however, tend to be restricted in their clientele. They will be discussed in the next section on social minimum services.

Education, libraries, and parks and recreation each are developmental in nature, but they differ substantially from each other in their social functions. Education is the most important of these services, because it influences one's life chances the most. The relatively occasional and peripheral use made of library, parks, and recreation services makes the equity issues in regard to them less momentous, though still important, than those applying to education.

There are serious measurement problems with each of these services. With education, it is not clear how the investment of resources is related to results or to impacts. Education activities are difficult to measure. Time indicators are not helpful. The measurement problems with libraries and parks are dominated by the discretionary and occasional use that is made of them by their clientele. Indicators of access and availability and reasons for non-use as well as for use help to deal with the discretionary and occasional nature of these services. Irregular use is an effect of varying preferences and resources. Preferences for the services offered by libraries, parks, and recreation vary among individuals. Even among those individuals with similar preferences, the availability of space, time, and money vary. Some people buy books that others must go to the library and borrow. Some people use spacious yards, take vacations, have country homes, and use private clubs, while others depend on public facilities. Thus, when distribution of libraries is described, this does not describe the distribution of access to the kind of services libraries provide because some people have alternatives others lack. When distribution of public parks and recreation is described, variations in alternatives available to different people should be taken into account in interpreting the equity of a particular distribution.

Geographic Units of Analysis: The Service Area

Parks and libraries involve similar problems in determining service districts. The procedure described here for parks can be applied also to libraries. For each type of park, or facility, for which a distribution analysis is to be conducted, a circle should be drawn representing the park's service radius. The distance of the service radius will depend upon a) the type of park, and b) the distance standard accepted in the community for that type of park. For neighborhood parks, for example, the standard suggested by the National Recreation and Parks Association is a service radius of no more than one-half mile.

One objective is to determine the number of residents who do not live within a service radius. To accomplish that, a circle of appropriate radius, say one-half mile, should be drawn around each park classified as a neighborhood park. A circle also should be drawn around larger parks which perform functions similar to those of neighborhood parks. Those functions will need to be specified in order to decide whether also to draw service lines around school grounds and private recreation areas in developments. For private recreation areas, the service line would not go outside the area of eligible users, but it would not necessarily include all of the private development, since some eligible residents might live outside the service area radius accepted in the community. After service area boundaries are drawn, the area that falls within them should be inspected to determine whether they are accessible to all residences within them. Where there are impassable barriers, such as expressways, or barriers passable with considerable difficulty, the service boundaries should be modified to reflect realistic walking paths.

This process can be repeated for each type of park. For each park type, a service radius appropriate to it should be selected. For small and medium size parks, those with a service radius no more than two or three miles, the service area can be calculated in mileage rather than in time. For service areas of greater size, such as for regional parks, driving time is a more suitable criterion for calculating a service area. Ease of access may vary considerably, depending on the location from which one is traveling to the regional park.

A second objective is to determine whether enough park acreage and other facilities--ball fields, tennis courts, swimming pools, and so on, are available to serve the residents within each service radius. For this purpose, population estimates must be obtained for each service area. The procedure for making population estimates will be described below. At this stage, accurate data are needed on park acreage and on facilities in parks and elsewhere. Data on park acreage and facilities provide the basis for determining whether there are 10 acres of community-serving parkland, or whatever the standard may be, per 1,000 persons within the service area, or whether there is one basketball court for 500 people, if that is the standard.

These service radii also provide the geographic boundary within which to apply the other service indicators discussed in Chapter 4. For example, capital expenditures per resident and operating expenditures per resident should be based on the number of residents in the service area. These additional calculations are needed in this respect. 1) Some residents will live in more than one service area. Therefore, they will be the recipients of expenditures for each service area. If expenditures for one park are $20 per capita and those for a second park are $15 per capita, then residents living within both service radii would be the recipients of $35 per capita. 2) Some residents will not live in any service area. Therefore, they could be interpreted not to receive any expenditures on their behalf. In this interpretation, a neighborhood would be described in two parts. One percentage of its residents would receive X dollars of operating expenditures per resident, and a second percentage would not receive any. 3) Those living outside the service area, according to community standards, could be assigned to the service area of the park nearest them. This method would affect each indicator that relates a service variable, such as park acreage, facilities, or expenditures, to a population variable, such as each resident or to 1,000 residents. Assume that operating expenditures were $20 per capita, $40,000 for 2,000 residents within the service area and there are 2,000 more residents in the neighborhood outside the service area. If these 2,000 outsiders are included, for a total of 4,000 residents to be served, then per capita expenditures would be $10.

Resources

Indicators of resources, and the other categories of indicators for developmental services, are listed in Tables 11 and 12. For parks and recreation, acreage, expenditure, and distance indicators are most useful. Differences in access can be accounted for, partially, by distance indicators--distance to neighborhood parks, distance to supervised recreation, distance to playgrounds. In using these indicators, differing availability of transportation and alternative recreation opportunities should be kept in mind.

For libraries, expenditure and distance indicators also are helpful. Expenditures for books (and other materials) and personnel should be distinguished, because one of the important characteristics of library budgeting is the relative shares assigned to books (and other materials) and personnel. Indicators about the amount and type of books also are useful, though inevitably subjective.

Education is a specialized subject about which many studies have been conducted. Urban administrators who are not part of education bureaucracies have little, usually no, influence on education policies. Those who have a special interest in education should consult other sources.

Table 11. Indicators for Analyzing Park Service Distribution

Objectives: Provide a variety of leisure activities for all citizens which are enjoyable, accessible, aesthetically appealing, and safe.

Indicators by measurement category	Data collection source and procedure
Resources	
Acres of neighborhood parks/1,000 residents	Dept. records and updated census (same for other population indicators)
Acres of community-serving parks/ 1,000 residents	
Numbers of facilities (e.g. ball fields, tennis courts, swings, slides, and so on)/1,000 residents	
Number of residents more than x miles from parks (by type) and from facilities/1,000 residents	Dept. records, draw service radius, use block data
Capital expenditures/residents	
Operating expenditures/residents	Dept. records (requires time allocation for mobile employees and equipment
Capital expenditures/user	Dept. records and field observations
Operating expenditures/user	Dept. records and field observations
Number of facilities (by type)/ 1,000 users	Dept. records and field observations
Activities	Dept. records
Minutes of operation (facilities)/ resident	
Minutes of supervised recreation/ resident	
Minutes of programs (by type)/ resident	
Minutes of operation (facilities)/ user	

Indicators by measurement category	Data collection source and procedure
Attendance per 100 hours of operation by type of facility/ 1,000 residents	Dept. records or field observations
Number of users of community-serving parks/1,000 residents	Field observations
Citizen rating of park services overall	Citizen survey
Citizen rating of safety, cleanliness, and maintenance by park and facility	Citizen survey

Table 12. Indicators of Library Services

Objectives: Provide a comprehensive, timely, and accessible body of informational and educational materials that is satisfactory to all types of residents.

Indicators by measurement category[1]	Data collection source and procedure
Resources	Department records
Total number of books in each library branch per 1,000 persons per service district[2]	
Annual expenditures for books and other materials per 1,000 persons per service district for each branch	
Number of residents more than x miles from the nearest branch library by neighborhood	
Number of square feet of space for reading per branch for each 1,000 persons per service district	
Activities	Department records
Total hours branch libraries are open each week per 1,000 persons per service district	

Indicators by measurement category	Data collection source and procedure
Total hours of special programs in each branch library each week per 1,000 persons per service district	
Results	Department records and citizen survey
Percentage of persons in each branch library service area registered with the library system	
Number of books circulated annually by each branch library per 1,000 persons per service district	
Percentage of residents in each service district dissatisfied with their branch library services	Citizen survey

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[1] For a more extensive explanation of library indicators, see Kenneth R. Mladenka and William H. Lucy, Handbook for Analyzing the Distribution of Library Services, (Washington, D.C.: National Training and Development Service, 1978).

[2] Service districts for the purposes of indicators in this table should be drawn so that the entire jurisdiction is blanketed with service districts. Except where barriers interfere, residents should be assigned to the nearest branch.

Activities

Activity indicators for recreation are very difficult to identify and use. One of the better such measures is hours of supervised recreation programs. This has some difficulty when used to distinguish neighborhoods. Especially in smaller communities, supervised recreation may be concentrated in a few places so that some neighborhoods might appear to be totally deprived. This appearance, of course, could also be a reality; availability of transportation will determine the extent to which appearance and reality merge. Time indicators are probably the closest one can come to an activity measure for libraries. Total hours that branches are open and total hours of programs are two such indicators.

Results

Indicators of results also are difficult to obtain for these services. Parks and recreation are particularly difficult services for which to construct result indicators that provide meaningful distinctions among neighborhoods. One indicator that should be included is usage, especially usage of those facilities that are neighborhood-oriented. Playgrounds are the best example. Swimming pools are another example. These indicators should be used with caution. High usage may indicate high need and low availability of alternative public, and private, recreation alternatives. Therefore, it may be a better estimator of need for investment of additional resources than a measure of the success of existing facilities.

There are problems also with result indicators for library services. Circulation and frequency of use of branch libraries for all purposes are two indicators of results. Library usage is related to education and income. On the one hand, high circulation may say more about the clientele than about the services of the library. On the other hand, if high circulation is taken as an indicator of need, it may lead to higher income and higher education areas getting a substantially higher share per capita of expenditures for libraries.

Some citizen survey findings about developmental services should be useful to administrators. Opinions about parks and recreation are useful, for example, because a) use of parks is related to beliefs about one's potential safety when there, b) use is related to information about opportunities parks and recreation programs offer, and c) use is related to opinions about the adequacy of facilities and programs made available by parks and recreation services.

Opinions of residents can give insight to reasons for use and non-use of libraries--adequacy of book collections, hours of service, accessibility of location, helpfulness of staff. When variation in individual preferences are substantial, opinions of users and non-users become particularly important. This characteristic applies to library and to parks and recreation services.

Examples

Hypothetical examples of possible findings for indicators for recreation and libraries are given below.

Table 13. Hypothetical Recreation Indicators

	1	2	3	4
Expenditures for playground personnel and supplies per week (resource)	$300	$300	$300	$300
Average distance from residents to nearest playground (miles) (resource)	1	3/4	1/2	1/2
Total hours of supervised recreation at playgrounds per week during summer (activity)	40	40	40	40
Visits per week to playground (result)	600	400	300	200
Opinions about feelings of safety at playgrounds (result)	Fairly safe	Fairly safe	Safe	Very safe
Population	8000	5000	3000	2000

Here is a situation in which expenditures and hours of supervised recreation are the same for each playground. However, usage varies greatly, by a three-to-one ratio. The greater usage in neighborhood one would seem to be related to the greater area it serves and the larger population in that area. Perhaps usage would be even greater if people felt safer there. And perhaps people would feel safer if usage was not so heavy and if the number of supervisors was greater in relation to the number of users. This information clearly calls for further investigation. At a glance, one gets the impression that shifts in operating and capital expenditures are warranted.

Below are a set of possible findings for four indicators of library services for four neighborhoods.

Table 14. Hypothetical Library Indicators

	Neighborhoods			
	1	2	3	4
Expenditures per capita for library books for branches (resource)	$0.50	$0.67	$0.80	$1.00
Average distance from residents to nearest branch library (resource)	1/2 mile	2/3 mile	3/4 mile	1 mile
Circulation per year of books from branch libraries per 1,000 people in service area (result)	5	6.7	8	10
Resident opinion: How well are books in your branch library related to interests of neighborhood residents (result)	Poorly	Fairly well	Well	Very well

These data reflect proportionality among expenditures, area served, and circulation. There is a reasonableness to that pattern. But one of the consequences, in this hypothetical example, is that opinions of residents indicate great variety in how they perceive the branch library collections being related to their interests. It is possible that in neighborhood 1 the residents' dissatisfaction with the collection is caused by expenditures for books being low--half as much per capita as in neighborhood 4. Perhaps these expenditures are based on circulation. If so, this is important for two reasons. First, it may be that circulation is low partly because of dissatisfaction with the collection. Second, the variation in book expenditures may get out-of-hand, resulting in space shortages in popular branches. Both tendencies are self-reinforcing. More circulation leads to higher expenditures which may lead to more circulation.

Social Minimum Services

The services under this heading are commonly discussed as those performing much of the redistributive function of the economy. These programs, generally, are explicitly redistributive. They are intended to redistribute benefits that have accrued to individuals from the combined operation of the private and public economies. One of our themes, however, is that all services have distributive implications. They can perpetuate or modify the pattern of benefits that result from private sector activity of the economy. If they modify the pattern of benefits, their effect is redistributive.

The programs we place in the category of social minimum services include public assistance (welfare), public hospitals, public health and mental health, food stamps, hot lunches, day care, manpower training, and public housing. The guiding principle of these services is that there should be at least a minimum level of social services to provide necessities for people unable to get them in other ways. Each is designed for a limited portion of the population to provide a minimum income or essentials that income buys, such as food, housing, medical care, and job training. The standards for these services usually are set by the U. S. Congress or by state legislatures. These standards explicitly treat people unequally. Some people are eligible, while others are not.

The exclusive nature of these programs makes an analysis of distribution of them to the general population superfluous. Geographic analysis loses much of its relevance, because many, and probably most, of the people in any neighborhood will not be eligible for the service. Therefore, analysts should concentrate on those eligible. One question will be: Are those eligible treated equally? Or are they treated unequally according to explicit criteria that recognize need for service? Geographic analysis may be relevant to this. Accessibility to services often is a source of considerable inequality. Hospitals may be difficult to reach. This also is true of day care programs, hot lunch locations, public health services, and the like.

It also is relevant, of course, to compare services received by eligible participants with those received by ineligible persons. One complaint about some social programs, for example, is that rigid cut-off eligibility standards have the effect of making some of those eligible for services better-off than those slightly above the cut-off line. More generally, the question to ask is what level of service, and access to service, is available to those using the program compared with those not eligible for the program? In answering this question a data base is obtained for making policy judgments about the appropriateness of the standards, services, and funding levels in effect when the study was made.

A variety of indicators should be used in analyzing these services. The resource, activity, and result categories will be helpful in designing indicators. There are special problems, however, such as those referred to above and others related to the difficulty of identifying results, which are beyond the scope of our work here.

Geographic Analysis

The analysis of service distribution involves geographic comparisons. Geographic units must be selected for which data are to be gathered. Each geographic unit should have three characteristics. First, it should be feasible to gather service data for them. Second, population data and physical characteristics (such as housing) data should be available in order to match them with service data. Third, the unit should be relevant to decisions that may be made about the service.

These three characteristics often are difficult to obtain. There are differences between services that are likely to require use of more than one, and perhaps several, geographic units. Many services will have service districts. Each fire house is intended to serve a particular area. This also usually is true of public schools. These areas almost always will be different from each other and also will be different from police patrol districts. They are likely also to differ from refuse collection routes. And for some services, such as branch libraries and parks and playgrounds, service district boundaries are permeable since usage of these facilities is a matter of individual choice rather than of administrative discretion.

It will be most common to match service data with population data to obtain an indicator of x amount of service per capita, or per 1,000 people. For example, an analyst may want to determine expenditures for police patrol per 1,000 residents, or park acreage per 1,000 residents, or solid waste collected per 1,000 residents. Occasionally there will be a need for data for the number of households. For example, an analyst may want to determine solid waste collected per household or weekly public transit rides per household. For some purposes, such as parks and recreation analysis, age data will be useful, such as acres of playgrounds in relation to numbers of people under 18. Each of these data items is available in Block Statistics published by the U. S. Bureau of the Census. Block Statistics are published for every square block in the urbanized area of all 243 Standard Metropolitan Statistical Areas (SMSA'S) that existed in 1970. These data can be summed for all blocks that make up any unit for which aggregate indicators are sought--service districts, neighborhoods, or parts of neighborhoods.

To assist in evaluating the equity of a particular service distribution pattern, analysts will need other data. For example, they should identify the income and race of residents. Service distribution then can be related to income, and to race, to see if either characteristic seems to be associated with a service district or neighborhood receiving better or worse service than it seems it should receive based on some conception of equity. Data on the number of Negroes are reported for blocks.

The reliability of the data is questionable, but it probably is preferable to use block data to construct data for larger units than it is to take census tract data for race and to guess the racial characteristics of the portion, or portions, of a census tract for which one needs data. Income data are not available for blocks. A substitute for income can be used. Average value of owner-occupied housing is reported, as are the number of units, in block statistics. From these data, an analyst can construct averages for housing value for service districts or neighborhoods.

A much wider variety of population and housing data are available for census tracts. Census tracts rarely coincide with service districts. Nor are they likely to coincide with boundaries of neighborhoods, as neighborhoods are perceived by residents. If one proposes to make use of data available only in census tract documents, then it becomes necessary to adjust census tract data to fit service district boundaries. This requires assumptions, with an undetermined, but potentially considerable, margin for error, about the population and housing characteristics in the portion of a single tract, or portion of two or more tracts, which coincide with the service district boundaries. The simplest assumption is that the portion of a tract has the same characteristics as the entire tract. This probably is more often false than accurate. And how inaccurate it may be cannot be determined. For example, the median family income in a census tract might be $11,500. One might have to assume that the median family income in a portion of the tract was identical, even though visual inspection suggested that income variation in different parts of the census tract might be substantial. Similarly, if a service district overlapped part of two census tracts, having median family income of $10,100 and $11,900 respectively, one would need to use an arbitrary rule-of-thumb procedure to arrive at a service district estimate for median family income. If one estimated, as in Figure 3, that the tract with a $10,100 median constituted 60 percent of the service district ($10,100 x 60% = $6,060) and the tract with an $11,900 median constituted 40 percent of the service district ($11,900 x 40% = $4,760), then the sum of the two portions would be $10,820 ($6,060 + $4,760 = $10,820). This procedure has obvious flaws. It is not valid to add, or average, medians. There is no way to be confident that a portion of a census tract coheres to a census tract-wide statistic. Still, this procedure probably is the best available. While it may cause considerable distortion in comparing service districts that seem, by this method, to be similar in median family income, it will cause fewer problems in dealing with service districts that are more distinct from each other.

One requirement of the procedure is that an estimate be made of the proportion of the census tract population that is included within the service district. This can be done using block data. By comparing a map of blocks with a service district map, the sum of the population living within the service area can be computed. These data, of course, become outmoded, in some areas, between the censuses, which are conducted at 10 year intervals. The planning department serving the jurisdiction may have up-to-date population estimates based on building permits, demolition permits, electricity connections, and the like.

The third need for data to conduct geographic service analysis is to use units of analysis that are relevant for decision-making. The service district is a unit of analysis that often can produce information useful for decision-making by urban administrators. Per capita garbage collection costs may be much lower than the norm in one service district, and refuse left on the street after collection may be greater in that district. If so, administrators could use this information to shift the expenditure pattern, modify decision rules used in collecting garbage, and/or add supplementary programs. Expenditures per crime reported may be considerably lower in one police patrol district than the norm in other districts. Perhaps the crime rate has been rising faster in that district as well. This information might be used to modify police patrol intensity, and perhaps the allocation of investigative personnel. The average distance from residences to playgrounds might be considerably less in one neighborhood, or service district, than in other neighborhoods. Perhaps the equipment and/or programs are fewer in that particular neighborhood as well. Perhaps density is greater and incomes are lower there also, resulting in fewer recreational alternatives for young people living there. In such a case, the arguments for redirecting recreation resources would be strong. In each of these, and many other, instances, the service district is useful as a unit for which to gather distributional data.

Information about units of analysis other than service districts also is useful to administrators. Garbage collection may be less satisfactory on a block that is particularly densely settled, or on several such blocks, in a service district which at the aggregate level seems to compare adequately with other service districts. This might be caused by lack of storage areas, by landlords that do not supply sufficient garbage cans, or by other conditions which may be associated with residents having low incomes. For the results of garbage collection to reach a satisfactory level in such an area, or areas, it may be necessary to modify a number of practices which work well in most areas. This possibility would not be identified by using service district data. Fire department administrators need to know how many (and the percentage of) residences, and other buildings, are more than the recommended number of feet from fire hydrants, and whether there are some fire hydrants that are not operating properly. This same need for specific information applies to a number of physical facilities, such as street lights, sidewalks, sewers, paved streets, and water lines. The block--that is, both sides of a street, rather than a square block as used in census documents--is an appropriate unit of analysis for these services, supplementing the neighborhood, census tract, or service district level of analysis. The absence of adequate services may be cumulative, applying to a number of services. If certain blocks suffer cumulative deprivation, this condition can be identified only by using the block as a unit of analysis.

In selecting units of analysis, priority should be given to choosing units that are most relevant to making decisions for each service. This basis for decisions usually will lead to selecting service districts as the unit of analysis. Because service district boundaries for various services often will differ, one from another, systematic comparison of parts of the jurisdiction that are well-or poorly-served cumulatively will be difficult to make. However, by mapping the findings for each service, and by developing transparent overlays for them, visual identification of relatively deprived and relatively well-off areas, in terms of the quality and quantity of services, can be identified. This information also can be computerized, using a code for each street and block. In this way, comparisons among services for each block in the jurisdiction would be possible.

The Technology of Methodology

Having presented a framework for analyzing services, categorized services by types, suggested indicators for several services, and discussed geographic analysis, more remains to be done. Two steps are needed. One is to relate service indicators to concepts of equity. Is the service distribution pattern consistent with the concept of equality, or is it responsive to need or to demand? Ways of doing this are presented in Chapter 6. There the relationship between equity concepts, decision rules, service indicators, and management decisions is summarized.

The second necessary step is to decide which indicators to select and how to interpret the findings from the indicators selected. There is more art than science in this process. The more indicators one can gather data for, the more fully the distribution pattern of the service can be described. But a complete description of service distribution is not possible. Cost constraints will impose themselves in any event. The selection of indicators, then, will be a function of what data are routinely available, how many purposes will be served by gathering additional data, what possibility is there that knowledge of the distribution of a particular service indicator might lead to action that otherwise would not occur, and what is the budget for the data gathering and analysis process.

Having selected indicators, how is one to interpret the findings? For a given indicator, say fire response time, a jurisdiction-wide mean response time can be computed—four minutes perhaps. The meaningfulness of departures from that mean could be approached in three ways. The deviation of every service district from that mean could be computed and the extreme high response time districts could be selected for action—regardless of how much they deviated from the mean. The second interpretation would call for action only if deviations from the mean exceeded a specified standard, say six minutes. This second method seems much preferable to the first. The third method would be to carry the analysis a step farther and to consider what part of the high response time districts had the highest response times, and, in addition, to see if they bordered parts of other districts with high response times. By this method, policy makers could decide whether fire stations should be added or relocated. Thus, the way to use the data for a given indicator should be related to possible action that government might take.

Some analysts will be tempted to convert the findings for each data item (e.g. fire response time, value of property lost to fire, percentage of residences inspected for fire hazards annually, and the like) to a common base and then to add them together. For example, for fire district no. 1, the fire response time might be 75 percent higher than the mean, the value of property lost 35 percent higher than the mean, and the percentage of residences inspected annually 10 percent lower than the mean. Each of these would be in the direction of less desirability. An analyst could decide to add them (75, 35, and 10) and then to divide by three, yielding a mean score for district 1 of 40. A score of this sort could be computed for each district.

Summary scores of this type are interesting, but one should not make too much of them. Any summary score implies a weighting system. If no weighting system is made explicit, then each item is weighted equally. One must decide whether this is appropriate. More importantly, summary scores can hide what individual scores reveal. For example, property loss 35 percent higher than the mean may result from a single serious fire, and not call for a policy response. But a 75 percent higher response time, if it also exceeds the standard that fire officials consider excessive in adding to the risk of loss of life and property, may call for a policy response to provide additional or relocated fire stations, or more men and equipment. The importance of this policy response will not be illuminated by a summary score of 40 for district 1 for three indicators. The summary score is useful, however, in that it can show whether there is a pattern of inferior, or superior, service, in addition to whatever individual indicator findings seem to call for a policy response.[4]

Another methodological issue concerns how, and whether, to develop summary service quality scores for service districts, neighborhoods, or census tracts for several services. The biggest obstacle to such summaries is that data probably will be gathered for service districts and the service districts for different services are not likely to have the same boundaries. Without common boundaries, summary scores are meaningless. Administrators are not likely to have much incentive to reverse the process, trying to gather data for many services for identical territories, such as census tracts. Such data are more difficult to gather and of less decision-making usefulness than are service district data. For academics, interested in patterns of service distribution, in correlations with socioeconomic and population indicators (e.g. income and race), the effort is more likely to be valuable.

Some Ways for Urban Administrators to Use Distributional Analysis

In Chapter 3, we discussed the significance of decision rules, noting that decision rules have distributional consequences. Sometimes the direction of these distributional consequences can be inferred. The extent of distributional consequences, however, only can be guessed at without data to describe the service pattern. Administrators may want to change decision rules but be uncertain about the importance of doing so. Distributional analysis will help them decide which rules to retain and which rules to change. Since decision rules govern all the important, routine aspects of urban service delivery, the combination of decision rule identification and distributional analysis brings the routine aspects of service delivery within the decision-making scope of administrative generalists, dependent on bureaus to deliver services and with substantial authority delegated to bureau personnel. City and county managers, budget directors, and planning directors are locked out of a great many service delivery decisions in which they have a legitimate role. This minor role also describes the fate of elected officials— mayors and local legislators. Their role in service distribution is much more minor, it appears, than the role of administrative generalists.

Attenuation of supervision and control of operating departments by administrative generalists and elected officials diminishes the accountability of local government to local citizens. Decision rule analysis and distributional analysis, therefore, have fundamental importance in establishing more meaningful linkages between citizens and their government.

Changes will also occur in the annual operating budget, reflecting departmental changes. Capital improvement programs, which usually schedule capital projects five or six years in advance, require decisions about locations as well as about types of projects. Distributional analysis will provide much greater systematic information for officials to use in preparing capital improvement programs. Officials will have accurate answers to questions like: Which neighborhoods are most in need of park and recreation improvements? Which neighborhoods need street improvements, better mass transit service, a branch library, and upgraded water supply? Just as capital programming will be strengthened, so also will the preparation of community facilities plans and decisions about how to allocate federal funds made available in block grants under the Housing and Community Development Act of 1974.

Efforts to make local services more effective will be given a new dimension. Objectives can be set for service districts and neighborhoods, as well as for the entire jurisdiction. Jurisdiction objectives may be either reflections of past performance or arbitrary guesses about what a new program or service should achieve. The goal of distributional equity becomes operational— something that administrators can work with-once systematic distributional analysis is executed. Management by objectives, therefore, also achieves a new dimension. Aiming at a two percent increase in the jurisdiction's arrest rate is one type of goal. Aiming at a variation among service districts or neighborhoods of no more than 10 percent is a second type of goal. Program evaluation of new services, new decision rules, or new facilities also is given added meaning. For program evaluation to be meaningful, base-line and trend data are needed. Without information about past performance, there is no way to assess the effect of changes in rules, facilities, and services. Service status monitoring can provide this baseline data. The richest form of baseline data is data that includes distributional analysis.

Previous mention was made of the strength that distributional analysis can add to the linkage between citizens and government. Since the mid-1960's, citizen participation has been advocated as a means of improving that linkage. Satisfaction with citizen participation methods varies widely. The consequences of the various participation methods are not well understood. But one aspect of citizen participation is clear. Citizens lack sufficient information to participate meaningfully in regard to most local service delivery issues. Furthermore, government officials often lack sufficient information to respond appropriately to requests and demands from citizens. Systematic distributional analysis can help correct both these deficiencies in the linkage between citizens and government.

Conclusion

In analyzing urban services, it is important to use a number of different kinds of indicators. Research findings have shown that distribution patterns discovered for one indicator are often not the same as those found for other indicators. In addition, different kinds of measures provide information that is needed by administrators, and by elected officials and citizens, in making decisions. It is important to know how resources are distributed. It also is important to know the pattern of activities and the pattern of service results. In selecting indicators, an attempt should be made to cover each objective of a service, remembering that services usually have more than one objective. Unintended consequences should be taken into account when indicators are selected.

Complex measurement and analysis are expensive. Short-cuts are needed. Sampling is one necessary short-cut. Selectivity in indicators is another. Limiting services analyzed is a third. Selectivity will be particularly appropriate during the first attempt at data gathering and analysis of service distribution. Experience will aid judgment about what is worth doing. Funding will need to be obtained. There are a number of options. Funds could come from the budgets of the manager, budget office, or planning. Some communities may be able to use general revenue sharing funds. Others can use funds available under the Housing and Community Development Act of 1974 to study some services. The federal and state governments could provide a new source of funds, and, in time, perhaps they should require that such studies be conducted as a condition of eligibility for certain federal and state funds.[5]

FOOTNOTES

1. A few indicators to be obtained from citizen surveys are included in the sample list of indicators with each category of services in sections that follow. Sample citizen surveys are included in handbooks for individual services (police, parks and recreation, solid waste collection, and libraries) that accompany this volume. Other sample citizen surveys can be found in Webb, Kenneth, and Hatry, Harry P., Obtaining Citizen Feedback, (Washington, D.C.: The Urban Institute, 1973); and The Urban Institute and International City Managers Association, Measuring the Effectiveness of Basic Municipal Services, (Washington, D.C.: The Urban Institute, 1974). For survey methodology see Charles H. Backstrom and Gerald D. Hursh, Survey Research, (Evanston, Ill.: Northwestern University Press, 1963), and Herbert H. Hyman, Survey Design and Analysis, (Glencoe: Free Press, 1955).

2. Campbell, Donald T., and Stanley, Julian C., (Experimental and Quasi-Experimental Designs for Research, (Chicago: Rand McNally & Co., 1963); Hatry, Harry P., Winnie, Richard E., and Fisk, Donald M., Practical Program Evaluation for State and Local Government Officials, (Washington, D.C.: The Urban Institute, 1973); Weiss, Carol H., Evaluation Research, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972).

3. Boots, Andrew J. III, Dawson, Grace, Silverman, William, and Hatry, Harry P., Inequality in Local Government Services: A Case Study in Neighborhood Roads, (Washington, D.C.: The Urban Institute, 1972).

4. For attempts to develop summary indices, see the Neighborhood Standards Project of Portland, Oregon, 1978, and Dajani, Jarir S., Vesilind, P. Aarne, and Hartman, Gerald, "Measuring the Effectiveness of Solid Waste Collection," Urban Analysis, 1977, 181-219.

5. Some of the material in this chapter draws on an article by William H. Lucy, Dennis Gilbert, and Guthrie S. Birkhead, "Analysis of Equity in Local Service Distribution," Public Administration Review, 1977.

SELF-EVALUATION QUESTIONS

1. What are the main components of, and the relationships within, the service delivery framework suggested for guiding the selection of indicators?

2. Define service resources, activities, results.

3. What is the definition of service impacts? Why are impact indicators difficult to identify and use?

4. Define and identify routine services, protection services, developmental services, and social minimum services?

5. How are categories of indicators related to conceptions of equity? Cite some examples.

6. Why are citizen surveys useful for some services? What services are citizen surveys particularly useful in analyzing? Are the indicators obtained in this way likely to be indicators of resources, activities, or results?

CHAPTER 5. LEGAL ISSUES OF URBAN SERVICE DISTRIBUTION

Challenges to the legality of urban service distribution patterns primarily can be brought on three legal foundations. One basis is the equal protection clause of the 14th Amendment to the U.S. Constitution. A second is the Voting Rights Act of 1965. A third foundation is revenue sharing legislation - principally the State and Local Assistance Act of 1972 but also the Housing and Community Development Act of 1974. These three legal foundations make every community potentially vulnerable to having its service distribution patterns scrutinized by the federal courts.

The cases decided thus far have demonstrated that residents have standing to sue local officials to compel changes in their actions as public officials. They have demonstrated further that the courts can mandate specific performance--down to dictating the number and location of street lights and the size and locations of sewers--after a finding of unconstitutional past actions by local officials in distributing public services. They have demonstrated that the courts can halt the use of federal revenue sharing funds, pending correction of a discriminatory practice found to violate nondiscriminatory provisions of the general revenue sharing statute. They have demonstrated that findings of disparities in service distribution can be used by the courts as partial support for an order requiring changes in local elections, such as changing an at-large council election system to a district election system.

The Constitutional Framework

Local governments traditionally have been accorded wide discretion by the courts in allocating services.[1] The landmark case of Hawkins v. Town of Shaw (1971)[2] established some limits under the equal protection clause. The equal protection clause provides that: "No state shall make or enforce any laws which shall abridge the privileges or immunities of citizens in the United States. . .nor deny to any person within its jurisdiction the equal protection of the laws." Hawkins was decided by the U.S. Court of Appeals for the 5th Circuit. The norm has been for lower federal courts to adopt the majority's reasoning in Hawkins. The U.S. Supreme Court has not ruled on an urban service distribution case. However, on June 7, 1976, in Washington v. Davis[3], the court criticized an important aspect of the Hawkins decision. We will discuss this criticism after analyzing Hawkins.

One needs to know the facts of Hawkins in order to interpret the decision's implications. Residential segregation in the Town of Shaw was nearly total. Ninety-seven percent of the blacks resided in all-black neighborhoods. Disparities in the provision of some public facilities were related to racially segregated neighborhoods. For example, 97 percent of all persons living in homes fronting on unpaved streets in Shaw were black. Although many mercury vapor street lamps had been installed in white neighborhoods, none had been installed in black neighborhoods. Two black areas of Shaw, containing 63 percent of the black population, had the lowest water pressure in the town. No black homes fronted on streets with underground storm water sewers, although this service was provided for 51 percent of white homes. Other less striking statistical disparities were noted for sanitary sewers, drainage ditches, and fire hydrants.[4]

The court decided that this statistical information about paved streets, water pressure, street lights, sewers, and the like, constituted evidence of a prima facie case of racial discrimination. In the court's terms, if a group is classified by race, by statute, or by administrative action, such a classification is "suspect" within the meaning of the equal protection clause. Suspect classifications provide a permissible basis for governmental acts, only if a compelling state interest can sustain them.[5] In many instances, laws do classify people. Some people have been exempted from the military draft; some are eligible for welfare, medicaid, and food stamps. Race, however, is not a permissible way of classifying people.

The determination by the court of the existence of a prima facie case of racial discrimination in the Hawkins case had several implications. It meant that the residents who had filed the suit need not demonstrate any ill intent or motive on the part of the defendants[6], instead needing only to demonstrate the existence of a substantial statistical disparity. It meant that the scope of the 14th Amendment equal protection clause was extended to routine local services, like water and sewers, because a "suspect classification" was involved even though the court did not consider them constitutionally protected "fundamental rights." The right to vote and the right to a fair trial are examples of rights that are considered "fundamental" by the Supreme Court. The court's determination that a prima facie case of racial discrimination existed meant that the burden of proof shifted from the citizen plaintiffs to the public officials who were the defendants. And it meant that the defendants needed to demonstrate that service disparities were caused by trying to achieve some "compelling state interest," instead of needing to meet the less stringent test of showing only that there was a "rational relationship" between the service disparities and some legitimate state purpose.

In Washington v. Davis (1976)[8] the U.S. Supreme Court dealt extensively with the question of whether racially discriminatory intent must be proven before effects of public action, or inaction, are determined to be unconstitutional. In doing so, the Court modified the interpretation of the Court of Appeals in Hawkins, and, in fact, cited Hawkins in a list of cases in which it believed excessive weight had been given to effects rather than to intent. The distinction between effects and intent, however, often is obscure in practice. The question becomes one of how intent is demonstrated. Intent often is demonstrated through the effects of action or inaction. Consequently, the Court's decision at first appears to sharply increase the burden of proof on the plaintiffs in municipal services equalization cases. Other language in Washington v. Davis seems to indicate that the increased burden of proof may not be great. One thing that is clear is that since the rule of law cannot be stated unambiguously, the facts of a particular case and the persuasiveness with which they can be marshalled are likely to weigh heavily in the courts' interpretation of whether a violation of equal protection has occurred.

The importance of Washington v. Davis warrants quoting passages here from the majority's seven to two opinion. In addition, passages are quoted from a separate concurring opinion by Justice Stevens.

The majority in Washington v. Davis stated:

> . . . our cases have not embraced the proposition that a law or other official act, without regard to whether it reflects a racially discriminatory purpose, is unconstitutional solely because it has a racially disproportionate impact. . . .
>
> This is not to say . . . that a law's disproportionate impact is irrelevant in cases involving Constitution-based claims of racial discrimination. . . . Necessarily, an invidious discriminatory purpose may often be inferred from the totality of the relevant facts, including the fact, if it is true, that the law bears more heavily on one race than another. It is also not infrequently true that the discriminatory impact . . . may for all practical purposes demonstrate unconstitutionality because in various circumstances the discrimination is very difficult to explain on nonracial grounds. . . .
>
> . . . various Courts of Appeals have held in several contexts, . . . that the substantially disproportinate racial impact of a statute of official practice standing alone and without regard to discriminatory purpose, suffices to prove racial discrimination violating the Equal Protection Clause absent some justification going substantially beyond what would be necessary to validate most other legislative classifications. [Here the Court cited Hawkins v. Town of Shaw and cases involving employment, housing, zoning, and urban renewal.] The cases impressively demonstrate that there is another side to the issue; but with all due respect, to the extent that those cases rested on or expressed the view that proof of discriminatory racial purpose is unnecessary in making out an equal protection violation, we are in disagreement.[9]

In his concurring opinion, Justice Stevens took a middle position between the Supreme Court and the Court of Appeals' decisions it criticized, on the question of how unconstitutional discrimination is demonstrated:

> Frequently the most probative evidence of intent will be objective evidence of what actually happened rather than evidence describing the subjective state of mind of the actor. For normally the actor is presumed to have intended the natural consequences of his deeds. . . .
>
> My point in making this observation is to suggest that the line between discriminatory purpose and discriminatory impact is not nearly as bright, and perhaps not quite as critical, as the reader of the Court's opinion might assume. Therefore, although I accept the statement of the general rule in the Court's opinion, I am not yet prepared to indicate how that standard should be applied in the many cases which have formulated the governing standard in different language.[10]

In the Village of Arlington Heights v. Metropolitan Housing Development Corporation (1977), the Supreme Court elaborated on how intent to discriminate might be demonstrated. The decision in this case does not concern us, because it involved issues of zoning and racially-mixed low income housing development. The Court's reasoning about how to demonstrate discriminatory purpose, however, is relevant here. The Court said:

> The historical background of the decision is one evidentiary source, particularly if it reveals a series of official actions taken for invidious purposes. . . . The specific sequence of events leading up to the challenged decision also may shed some light on the decision-maker's purposes. . . . Departures from the normal procedural sequence also might afford evidence that improper purposes are playing a role. Substantive departures too may be relevant, particularly if the factors usually considered important by the decisionmaker strongly favor a decision contrary to the one reached. The legislative or administrative history may be highly relevant, especially where there are contemporary statements by members of the decision-making body, minutes of its meetings, or reports.[11]

Therefore, it seems reasonable to infer that:

1. The demonstration of intent to discriminate will be more difficult than letting the facts speak for themselves.

2. There may be less tendency for the courts to apply a compelling state interest test and a greater tendency to apply a rational relationship standard.

These changes will make proof of an equal protection violation more difficult to demonstrate. Despite these changes, it is not clear how they would have affected the decision in Hawkins v. Town of Shaw, nor how they might have modified some of the other decisions to be described below.

In light of the Hawkins v. Town of Shaw decision, what situations are brought within the scope of the 14th Amendment equal protection clause?

When a single local government distributes services so that there are gross service disparities, readily amenable to statistical measurement, which can be related to "suspect classifications," such as racially segregated neighborhoods, then recourse to the courts under the mantle of the equal protection clause will almost certainly be successful.

However, the extreme conditions in the Town of Shaw raise doubts about where the courts will draw the line. For example, there is little guidance in Hawkins v. Town of Shaw as to the following:

1. How racially segregated a neighborhood must be to constitute a "suspect classification"?

2. How great the service disparities must be to call for a judicial remedy?

3. How defendants might demonstrate that a "compelling state interest" justified a pattern of service disparities, and how such a demonstration would differ from showing that there was a "rational relationship" between service patterns and a legitimate state purpose?[12]

Administrators' legal position will be well-served by their providing either an equal distribution of services or an unequal distribution based on reasonable criteria. The courts are most likely to stress indicators of resources in evaluating service distribution patterns. Resource indicators have been emphasized in the court decisions made thus far. The courts are least likely to rely on indicators of results. Result indicators involve interpretation of complex issues, including causal relationships between service resources and results and equity judgments about how much inequality of resources may be required to achieve equality of results. Attention to resource indicators by the courts establishes a minimum threshold of methodological sophistication that administrators would do well to cross. In this regard, administrators should set higher standards for themselves than the courts are likely to impose.

Additional Constitutional Issues

There are other aspects of public service equalization issues which the courts have confronted. An examination of these issues will help to show how the courts, prior to the Supreme Court's decision in Washington v. Davis, have limited their intervention. The issues we will examine are input equality vs. equality of conditions, the need for services, wealth as a "suspect classification," special assessment financing and inter-jurisdictional equality.

Resource Input Equality vs. Equality of Resource Conditions

In Beal v. Lindsay (1972)[13], the complaint dealt with unequal resource conditions in four parks in the Bronx in New York City. The plaintiffs, who were black and Puerto Rican, argued that the park nearest their residences had more trash, broken glass, and inoperable facilities than three other Bronx parks in the neighborhoods where a higher percentage of whites lived. City officials argued that their input of resources in expenditures and personnel in the plaintiff's neighborhood park was equal to, or greater than, their input of resources into the three comparison parks. City officials blamed vandalism for the unequal conditions. The court held that equal conditions were not required, "when, as here, the factor requiring added effort is not the result of past illegal action. Nothing in Hawkins v. Town of Shaw suggests that if the town had installed modern streetlamps in the black quarter and these were repeatedly vandalized, the town must go on and on, even though this would mean a greater unit expenditure than in other areas."[14]

Need for Services

The need for services by a particular classification of people, such as a neighborhood, a racial group, or a group of poor people, is an area of the law which the courts have begun to chart.

One of the first challenges to unequal local public school expenditures[15] lost in federal district court, primarily because the court found the concept of "educational needs" unmanageable. The plaintiffs argued that "educational needs" provided the sole legitimate basis for making public school expenditures and that for expenditures to reflect local school districts' financial strength was unconstitutional. The court's response was:

> We conclude that no cause of action is stated for two principal reasons: 1) the Fourteenth Amendment does not require that public school expenditures be made only on the basis of pupils' educational needs, and 2) the lack of judicially manageable standards makes this controversy nonjusticiable.[16]

The court also noted that "while the complaining students repeatedly emphasize the importance of pupils 'educational needs,' they do not offer a definition of this nebulous concept."[17]

In rejecting the "educational needs" standard, the courts refused to become embroiled in assessing how program cost and content were related to the needs of different individuals, measurements of those educational needs, or tests of whether those needs were being met. In Serrano v. Priest in California[18] and San Antonio Independent School District v. Rodriquez in Texas[19], the courts were asked to hold only that public school finance must be "fiscally neutral." That is, the courts were asked to rule on unequal resources rather than unequal results or unequal educational needs.[20] This argument offered the courts a standard that was more judicially manageable than was the "educational needs" standard. The school finance cases will be discussed further below.

On the other hand, in some instances the courts have asked for evidence that needs for services were similar enough to justify equal resources. In Hawkins v. Town of Shaw, the plaintiffs argued that the characteristics of black and white neighborhoods were not so dissimilar as to warrant grossly dissimilar public facilities. One of the defendant's responses was to offer varying "need standards" to justify administrative actions. For example, with respect to street paving, town officials alleged that "the paving actually done in the municipality was on the basis of general usage, traffic needs and other objective criteria."[21] The Court of Appeals did not conclusively reject this argument. Instead it said that "even if we assume that such criteria as traffic usage, need and width constitute compelling state interests, they were not applied equally to both black and white neighborhoods."[22] This language could be important. It does not make clear how the court would have ruled had street paving been implemented evenhandedly using criteria involving traffic usage and need. Thus, we cannot be sure the court would have ruled that evenhanded administration of the standard would have failed to meet the "compelling state interest" test.

However, some cases suggest that where there has been a history of illegal action, added effort on behalf of the disadvantaged neighborhood to achieve equal results would be called for. Thus the 5th Circuit Court of Appeals stated in Henry v. Clarksdale School District (1971) that a "relationship otherwise rational may be insufficient in itself to meet constitutional standards--if its effect is to freeze in past discrimination."[23] In Hawkins v. Town of Shaw, the court held that even if the Town in recent years had been extending sanitary sewers into new areas "in a non-discriminatory manner, [this] is not sufficient when the effect of such a policy is to 'freeze in' the results of past discrimination."[24] And in Selmont Improvement Association v. Dallas County Commission (1972), the federal district court ruled that discrimination in street paving in a subdivision that occurred prior to 1954 would be "frozen in" unconstitutionally unless action were taken. Therefore, even though there was no evidence of discrimination in service distribution in the 18 years between the discriminatory acts and the court decision, the court ruled that the county's evenhandedness since 1954 did not meet the compelling state interest test.[25] This may be an example of a case that could have been decided differently had the Supreme Court's decision in Washington v. Davis been in effect concerning the need to demonstrate purposeful intent.

Wealth as a "Suspect Classification"

Wealth has been held to be a "suspect classification" in cases involving "fundamental rights," such as the right to vote. For example, poll taxes have been struck down on this ground.[26] In federal district court, the original plaintiffs in San Antonio v. Rodriquez (1973) had sought to convince the court that education is a "fundamental right" by establishing a close nexus between quality education and sound exercise of freedom of speech and the right to vote.[27] Similar arguments has persuaded the California State Supreme Court in Serrano v. Priest (1971).[28]

As a "fundamental right," it was argued that public education would need to be financed in ways that were not overly dependent on classifications by wealth. This would tend to rule out financing schools from local school districts with substantially unequal taxable resources. A state would need to show a "compelling state interest" in a particular financing method were that method to result in excessively unequal fiscal resources per pupil.

In San Antonio v. Rodriquez, the Supreme Court rejected these arguments. First, it found that "education . . . is not among the rights afforded explicit protection under our Federal Constitution."[29] Second, "even if it were conceded that some identifiable quantum of education is a constitutionally protected prerequisite to the meaningful exercise of either right (of speech and voting), we have no indication that the present levels of educational expenditure in Texas provide an education that falls short. . . . No charge fairly could be made that the system (in the present case) fails to provide each child with an opportunity to acquire the basic minimal skills necessary for the enjoyment of the rights of speech and of full participation in the political process. . . . We have never presumed to possess either the ability or the authority to guarantee the citizenry the most effective speech or the most informed electoral choice."[30]

San Antonio v. Rodriquez, therefore, prevented using the equal protection clause to bar unequal distribution, on the basis of wealth differences, of most public services.

Special Assessment Financing

When special assessment financing is employed, facilities of specified types, such as sewers, sidewalks, and paved streets, are installed only upon payment of all or part of the cost by appropriately located property owners, usually by those fronting on the location of the proposed public facilities. When service distribution is a function of ability and willingness to pay, as with special assessment financing, unequal distribution is to be expected. This circumstance was confronted in a service equalization case one year before the Hawkins v. Town of Shaw Circuit Court decision. The case, Hadnott v. City of Prattville (1970),[31] was noteworthy in that the federal district court ruled that the equal protection clause was violated because of the existence of park inequalities.

Street paving, water lines, and sewer lines, however, were financed by special assessments. The judge ruled that "this Court is clear . . . that under the evidence in this case the responsibility for initiating a paving or sewerage or water line assessment and for paying for same is a reasonable attribute of property ownership. . . . This difference in the paving of streets and the establishment of sewerage and water lines does not constitute racially discriminatory inequality."[32] The effect of special assessments is to classify on the basis of wealth. Classification by wealth confronts the problem as in San Antonio v. Rodriquez that wealth is not a suspect classification under the equal protection clause for services that are not considered fundamental rights.[33]

Prattville was a place where, in the judge's opinion, the special assessment requirement had been administered evenhandedly. There are other fact situations in which the constitutionality of special assessments may be questionable. For example, if services were financed from the general fund in white areas and from special assessments in black areas, a suspect classification would seem to be in use which perhaps would require a compelling state interest to sustain it.[34] There also may be a variety of fact situations in which special assessment financing could be challenged under state statutory requirements for public service corporations to serve applicants on equal terms and without discrimination.[35]

Interjurisdictional Inequality

Attempts to have interjurisdictional unequal service distribution declared unconstitutional by the courts face several obstacles. These obstacles are the problems of identifying suspect classifications, ascertaining that the services at issue qualify as fundamental rights, and persuading the court that the compelling state interest test is applicable. Failing in this, the less stringent rational relationship test is employed and the burden of proof rests with the plaintiffs.

The public school finance cases are the most prominent ones which have confronted interjurisdictional inequality in service distribution. It was noted above that the U.S. Supreme Court in San Antonio v. Rodriquez had concluded that education was not a fundamental right within the scope of the equal protection clause. In addition, the Court refused to accept disparities in taxable wealth as evidence of a suspect classification. The Court said:

> However described, it is clear that appellees' suit asks this Court to extend its most exacting scrutiny to review a system that allegedly discriminates against a large, diverse, and amorphous class, unified only by the common factor of residence in districts that happen to have less taxable wealth than other districts. The system of alleged discrimination and the class it defines have none of the traditional indicia of suspectness: The class is not saddled with such disabilities, or subjected to such a history of purposeful unequal treatment, or relegated to such a position of political powerlessness as to command extraordinary protection from the majoritarian political process.[36]

Refusing to apply the compelling state interest standard, the Supreme Court then asked whether the Texas system of public education finance "bears some rational relationship to a legitimate state purpose."[37] The Court reasoned that the Texas system "was designed to provide an adequate minimum educational offering in every school in the State," and made it possible that "each district would have some ability to provide a more enriched educational program."[38] The Court concluded that it was rational to call on local governments to play a role in providing educational services.

The New Jersey State Supreme Court took cognizance of these arguments in overturning that state's means of financing public education in 1973. The reasons cited by the U.S. Supreme Court were among those which deterred the New Jersey judges from basing their decision on the Fourteenth Amendment equal protection clause. Instead, the court relied upon a provision in the New Jersey State Constitution which required that:

> The Legislature shall provide for the maintenance and support of a thorough and efficient system of free public schools for the instruction of all children in the State between the ages of five and eighteen years.[39]

Interpreting the meaning of this requirement, the court said:

> The Constitution's guarantee must be understood to embrace that educational opportunity which is needed in the contemporary setting to equip a child for his role as a citizen and as a competitor in the labor market. . . The trial court found that the constitutional demand had not been met and did so on the basis of discrepancies in dollar input per pupil. We agreed. We deal with the problem in those terms because dollar input is plainly relevant and because we have been shown no other viable criterion for measuring compliance with the constitutional mandate. The constitutional mandate could not be said to be satisfied unless we were to suppose the unlikely proposition that the lowest level of dollar performance happens to coincide with the constitutional mandate and that all efforts beyond the lowest level are attributable to local decisions to do more that the state was obliged to do.[40]

An additional reason why the New Jersey Supreme Court rejected reliance on the Fourteenth Amendment equal protection clause was that had it not done so, it saw great difficulty in drawing a line short of requiring equal statewide expenditures among jurisdictions for all services, thus nullifying much of the traditional role of local government. In deciding such an option would go farther than warranted by the case before it, the court again cited the U.S. Supreme Court decision in San Antonio v. Rodriquez:

> . . . any scheme of local taxation--indeed the very existence of identifiable local governmental units--requires the establishment of jurisdictional boundaries that are inevitably arbitrary. It is equally inevitable that some localities are going to be blessed with more taxable assets than others. Nor is local wealth a static quantity. Changes in the

> level of taxable wealth within any district may result from any number of events, some of which local residents can and do influence. . .
>
> Moreover, if local taxation for local expenditures is an unconstitutional method of providing for education then it can be an equally impermissible means of providing other necessary services customarily financed largely from local property taxes, including local police and fire protection, public health and hospitals, and public utility facilities of various kinds. We perceive no justification for such a severe denigration of local property taxation and control as would follow from appellees' contentions. It has simply never been within the constitutional prerogative of this court to nullify statewide measures for financing public services merely because the burdens or benefits thereof fall unevenly depending upon the relative wealth of the political subdivisions in which the citizens live.[41]

The U.S. Supreme Court went on to say that matters of state taxation and education were appropriately left to the states under the federal system.[42] The New Jersey Supreme Court then considered whether its state constitutional equal protection of the laws mandate should be invoked. The court decided it should not. The reason was that "the equal protection clause may be unmanageable. . ."[43] But no sooner had the court slammed the door, than it was opened again, at least a crack, when the court said:

> The equal protection proposition potentially implicates the basic tenet of local government that there be local authority with concomitant fiscal responsibility. The case now before us was not tried or argued in terms that local government as a political institution denies equal protection in New Jersey because unequal demands upon unequal tax bases result in statewide inequality as to benefits or as to tax burden. In these circumstances we will not pursue the equal protection issue in the limited context of public education.
>
> Nor do we consider a question that the parties have not projected, whether, apart from the equal protection guarantee, there is an implicit premise in the concept of local government that the State may not distribute its fiscal responsibility through that vehicle if substantial inequality will result. It may well be that at one time there was a rough correlation between the needs of an area and the local resources to meet them so that there was no conspicuous unfairness in assigning State obligations to the local units of government. Surely that

> is not true today in our state. Problems are now mobile. They have settled intensively in limited areas. Statewide there is no correlation between the local tax base and the number of pupils to be educated, or the number of the poor to be housed and clothed and fed, or the incidence of crime and juvenile delinquency, or the cost of police or fire protection, or the demands of the judicial process. Problems which are in no sense local in origin have become the special burden of those who cannot find a haven elsewhere.
>
> We need hardly suggest the convulsive implications if home rule is vulnerable upon either of the grounds to which we have referred. Nor need we expound the difficulties of management or judicial solutions if the problem must be met by the courts. We point to the dimensions of the subject to explain why we should not deal with it on the record of this case.[44]

Thus, the court decided to stay out of this political thicket.

Summary

The following observations summarize some of the most important results of litigation involving public service distribution:

1. Federal courts have invalidated unequal imputs of resources for services by local governments to groups which were made on the basis of suspect classifications. But they have refused to invalidate unequal conditions that were not caused directly by unequal resource inputs, such as unequal conditions caused by vandalism. Nor have the courts ruled that needs must be met if needs are unequal. However, they have asked for evidence that needs are reasonably similar in cases in which they have ruled that inputs must be equal. The courts have required, in some cases, that inputs of resources be equalized, but they have not ruled that activities, results, or impacts must be equalized. These decisions directing that resources be equalized have been by federal district courts and courts of appeal, not by the Supreme Court.

2. The courts have not provided guidance, nor have they been asked to rule, on whether and when administrative rules, such as basing inputs on street width, library or park usage, crime rates, and the like, might meet the requirement to demonstrate that a compelling state interest justifies unequal distribution of public services. However, courts have said that evenhanded administration for a number of years does not justify disparities resulting from a prior history of discrimination.

3. The public services involved in the equalization cases emanating from Hawkins and Serrano have not been ruled to be fundamental rights.

4. Suspect classifications, such as racial classifications, must be established, before the courts will invoke the equal protection clause to

force equalization of public services.

5. Wealth has not been ruled to be a suspect classification in cases that have not involved fundamental rights. Therefore, special assessment financing has not been barred. Interjurisdictional disparities of wealth and inputs of resources thus far have survived federal equal protection clause challenges.

6. The courts' desire has been to abstain, to leave the service distribution arena to the political process, intervening only when inequalities are clear and present for certain groups, such as racial minorities. The U.S. Supreme Court's criticism of the standard of proof used in Hawkins v. Town of Shaw, which was referred to in its 1976 decision in Washington v. Davis, raises additional questions about which of the equalization cases that were decided for the plaintiffs might not have been so decided had the plaintiffs needed, however indirectly, to demonstrate purposeful intent to discriminate.

Statutory Alternatives

In Washington v. Davis, the U.S. Supreme Court said that some legislative statutes impose stricter standards of non-discrimination than does the U.S. Constitution. An example, the Court said, was the standard imposed by Title VII of the Civil Rights Act of 1964 on issues of employment discrimination. In Washington v. Davis, the plaintiffs had based their argument on the due process clause of the Fifth Amendment to the Constitution. They argued that a written personnel test by which applicants were screened for the Washington, D.C. Police Department was unconstitutional because blacks failed at a much higher rate than whites and because the administrators of the test had not shown that success on the test was related to successful performance on the job. The Supreme Court noted that such a relationship (between the test and job performance) was required under Title VII of the Civil Rights Act of 1964 but not under the Constitution. Since the case had been brought on constitutional grounds, the Title VII requirement did not apply.45

It seems plausible that local governments will be held to a standard of non-discrimination under some federal legislation that is stricter than is required, in the Supreme Court's interpreation, under the equal protection clause of the Fourteenth Amendment. One such provision could be Title VI of the Civil Rights Act of 1964. Section 601 of Title VI states:

> No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

Title VI has not been invoked in municipal equalization cases, such as those discussed in the first part of this chapter. One reason for that concerns the source of funding for the services, the distribution of which was being challenged. In general, the services challenged were those financed solely, or primarily, from local, or perhaps in some instances from state, rather than from federal funds.

In recent years, a more potent statutory source on which to base attacks on municipal service distribution patterns has been enacted. The State and Local Fiscal Assistance Act of 1972 as amended in 1976 (general revenue sharing) contains explicit nondiscrimination requirements. Subtitle B, Administrative Provisions, Sec. 122, states that:

> No person in the United States shall on the ground of race, color, national origin, or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a State government or unit of local government, which government or unit receives funds made available under subtitle A.[46]

Under the act, funds can be used for capital expenditures and for operating expenditures for the following: public safety, environmental protection, transportation, health, recreation, libraries, social services for the poor or aged, and financial administration. Thus, a wide range of services potentially fall within the rubric of the nondiscrimination requirements. The administrative regulations implementing the 1972 Act expanded on the non-discrimination requirement stated in Sec. 122. For example, a recipient government may not "provide any service or other benefit which is different, or is provided in a different form from that provided to others under the program or activity" (31 C.F.R. Sec. 51.32 (b) (1) (ii), "restrict in any way the enjoyment of any advantage or privilege enjoyed by other receiving any service or benefit under the program or activity" (31 C.F.R. Sec. 41.32 (b) (1) (iv), "deny an opportunity to participate in a program or activity as an employee" (31 C.F.R. Sec. 51.32 (b) (1) (vi), or discriminate "in determining the site of location of facilities" (31 C.F.R. Sec. 51.32 (b) (3)). In addition, the regulations authorize action "to ameliorate an imbalance in services or facilities provided to any geographic area or specific group of persons within its jurisdiction, where the purpose of such action is to overcome prior discriminatory practice or usage" (31 C.F.R. Sec. 51.32 (4)).

Suits relying on statutory provisions and administrative regulations have been brought challenging the expenditure of general revenue funds. Chicago was enjoined on December 18, 1974, and again on November 13, 1975, from spending general revenue sharing funds as a result of a charge of discrimination in the Chicago Police Department. In this instance, Chicago allocated 75 percent of its revenue sharing funds to the police.[47] Several cases were brought in 1975 by the Lawyers' Committee for Civil Rights Under Law against communities in Mississippi. In January 1976, federal district courts froze general revenue sharing funds for Greenwood, Aberdeen, Okolona, and Ackerman, pending trial on the merits.

Civil rights groups have criticized the Office of Revenue Sharing in the Department of the Treasury, for not being vigilant in carrying out its responsibilities to prevent discrimination in the use of the funds provided under the legislation.[48] One of the dilemmas in enforcing the nondiscrimination provisions concerns the problem of identifying the activities for which general revenue sharing funds are spent. Recipients are required to file a report stating that funds were used for certain services and projects from among those eligible. In practice, general revenue sharing moneys go into the general fund, and city officials can claim to have spent funds on services and projects for which they are less subject to criticism for discrimination than if they had reported expenditures for other services and projects. The General Accounting Office, in testimony before the Senate Subcommittee on Intergovernmental Relations, suggested these categories were meaningless. Comptroller General Elmer Staats urged that the Revenue Sharing Act be modified to provide that "a government receiving revenue sharing could not discriminate in any of its programs or activities regardless of the source of funding, and revenue sharing funds would be withheld, after due process, pending acceptable actions to correct discriminatory practices."[49]

The Housing and Community Development Act of 1974, though not as sweeping as the State and Local Fiscal Assistance Act of 1972, also has important implications for the distribution of local public services. Although the emphasis in the legislation is on housing and related aspects of physical development, the range of eligible projects is substantial. Sec. 105 (a) (2) of the legislation identifies some of the eligible projects in this way:

> the acquisition, construction, reconstruction, or installation of public works, facilities, and site or other improvements - including neighborhood facilities, senior centers, historic properties, utilities, streets, street lights, water and sewer facilities, foundations and platforms for air rights sites, pedestrian malls and walkways, and parks, playgrounds, and recreation facilities, flood and drainage facilities. . . . , and parking facilities, solid waste disposal facilities, and fire protection services and facilities which are located in or which serve designated community development areas.[50]

The potential locations of these facilities are not confined to the poorest sections of communities. However, "the primary objective of this title is the development of viable urban communities, by providing decent housing and a suitable living environment and expanding economic opportunities, principally for persons of low and moderate income (Sec. 101 (c))." Thus, the thrust of the act is to serve poor people rather than better-off people. Therefore, the act is explicitly redistributive as regards the facilities for which the funds can be used.

Furthermore, the act to some extent is intended to facilitate redistribution of population. Sec. 101 (c) (6) establishes the goal of "the reduction of the isolation of income groups within communities and geographical areas and the promotion of an increase in the diversity and and vitality of neighborhoods through the spatial deconcentration of housing opportunities for persons of lower income and the revitalization of deteriorating or deteriorated neighborhoods to attract persons of higher income." Whether this will mean any substantial population redistribution in practice remains to be seen. Certainly there is reason to doubt that much mobility will result from the implementation of the act. The principal exploration of this aspect of the law revolves around a lawsuit in the Hartford, Connecticut metropolitan area. In it, a federal district court ruled that the Hartford suburbs would have to plan for some housing for low income persons in order to qualify for funds that the communities could use for other purposes.[51]

The Hartford case involved a metropolitan, intergovernmental issue. While important, it does not address the issue of legality of various patterns of distribution of facilities with HCDA funds within a given community. It will not be surprising if challenges to facility distribution using HCDA funds are brought in the future.

Service distribution also is one aspect of the facts considered by the courts in deciding whether local election systems deprive blacks from effective participation. The most sweeping decision of this type was made in late 1976 by a federal district court. The court ordered that Mobile, Alabama's system of electing three commissioners in city-wide elections be scrapped. In its place, the judge ordered that a mayor be elected city-wide with nine council members elected from districts. The decision was based primarily on the inability of Mobile's 35 percent black population to elect a representative to city government under the at-large voting system. Referring to service distributions, the judge found no "overt gross discrimination" in city services. However, he noted that there were "significant differences and sluggishness" in responding to service needs in black neighborhoods in comparison with the response to white neighborhoods. The case was appealed to the Court of Appeals. A decision was not expected until late 1977.[52]

Conclusion

The value placed by administrators on progressive management and the inherent obligation all public officials have to be fair in discharging their public responsibilities are sufficient motivation for public officials to give greater attention to equity in service distribution. The interventionist role of the courts provides an added incentive. Court decisions have gone to the heart of local governance--to the pattern of service distribution, to the use of public funds, and to the structure of the election system. Due respect for the wisdom of preventive medicine should bring administrators' attention to bear on equity. A crash program of data gathering and analysis to prepare a legal defense is more expensive and less productive than advance preparation carried out for one's own positive purposes. The development of positive purposes in service distribution should include self-conscious attention to decision rules and implicit conceptions of equity. An investment should be made in executing a methodology of data gathering and analysis sufficient for administrators to decide whether they are achieving a reasonable proportion of their purposes. If administrators can justify the pattern of service resources, activities, and results to themselves, they probably will be able to satisfy a court that their actions have been reasonable. The court decisions analyzed here provide administrators with some basis for estimating how the courts might rule.[53]

FOOTNOTES

1. Gowan v. Smith, 157 Mich. 443, 473. 122 N.W. 286, 297 (1909); Riss v. City of New York, 22 N.Y. 2nd 579, 240 N.W. 2d 860, 293 N.Y.S. 2d 897 (1968); 2E. McQuillin, The Law of Municipal Corporations, 10.33 (3rd ed. rev. vol. 1966).

2. 437 F.2d 1286 (5th Cir. 1971).

3. Washington v. Davis, The United States Law Week, 44 LW 4789-4801, June 8, 1976.

4. 437 F.2d 1286, 1289-1297 (5th Cir. 1971).

5. McLaughlin v. Florida, 379 U.S. 184 (1964); Hunter v. Erickson, 393 U.S. 385 (1969); Loving v. Virginia, 388 U.S. 1 (1967).

6. Norwalk CORE v. Norwalk Redevelopment Agency, 395 F. 2d 920, 929 (2d Cir. 1968).

7. 437 F. 2d 1286, 1287-1299 (5th Cir. 1971); Jonathon Shapiro, A Manual for Lawyers on Litigation for Equalization of Municipal Services, (New York: NAACP Legal Defense and Educational Fund, 1973), pp. 2-10; Jackson v. Godwin, 400 F.2d 529, 537, (5th Cir. 1968), Kennedy Park Homes Association v. Lackawanna, 436 F.2d 108, 114-115 (2nd Cir. 1970); Southern Alameda Spanish Speaking Organization v. City of Union City, California, 424 F.2d 291, 295-296 & n. 9 (9th Cir. 1970).

8. Washington v. Davis, supra 4789-4801.

9. Id. at 4792-4794.

10. Id. at 4800.

11. Village of Arlington Heights v. Metropolitan Housing Development Corporation, 97 S. Ct. 555.

12. Shapiro, op. cit., pp. 10-15 and 25-38.

13. 468 F. 2d 287 (1972).

14. Id. at 290.

15. McInnis v. Shapiro, 293 F. Supp. 327 (1968), aff'd 89 S. Ct. 1197 (1969).

16. 293 F. Supp. 327, 329 (1968).

17. Id. at 329, also see Burruss v. Wilkerson, 310 F. Supp. 572 (W.D. Va. 1969), aff's mem., 397 U.S. 44 (1970).

18. 5 Ca. 3d 584, 96 Ca. Rptr. 601, 487 p. 2d 1241 (Sup. Ct. 1971).

19. 93 S. Ct. 1278 (1973).

20. Paul L. Tractenberg, "The Lessons of School Finance Equalization." Trinity Parish Conference on Public Service Qualization, New York City, May 16, 1974, p. 4.

21. 437 F. 2d 1286, 1291 (5th Cir. 1971).

22. *Id*. at 1292.

23. 409 F. 2d 682, 688 (5th Cir. 1969).

24. 437 F. 2d 1286, 1294 (5th Cir. 1971).

25. 399 F. Supp. 477 (1972).

26. *Dunn* v. *Blumstein*, 405 U.S. 330, 92 S. Ct. 995, 999-1003 (1972); *Harper* v. *Virginia Board of Elections*, 383 U.S. 663, 86 S. Ct. 1079, (1966); *McLaughlin* v. *Florida*, 379 U.S. 184, 85 S. Ct. 283 (1964); *Douglas* v. *California*, 372 U.S. 353, 83 S. Ct. 814 (1963).

27. *San Antonio Independent School District* v. *Rodriquez*, *supra*, 93 S. Ct. 1278, 1298 (1973).

28. *Supra*, 5 Cal, 3d 584, 96 Ca. Rptr. 601, 487 p. 2d 1241 (Sup. Ct. 1971).

29. 93 S. Ct. 1278, at 1297.

30. *Id*. at 1298-1299.

31. *Hadnott* v. *City of Prattville*, 309 F. Supp. 967 (1970).

32. *Id*. at 970-971.

33. Also see *Dove* v. *Bumpers*, 364 F. Supp: 407 (1973), and *Citizens for Underground Equality* v. *Seattle*, 6 Wash. Appl 338 (1972).

34. For a variation on such a fact situation see *Selmont Improvement Association* v. *Dallas County Commission*, *supra*, 339 F. Supp 477 (1972).

35. Frank I. Michelman, "Obtaining a Fair Share of Municipal Services through Legal Proceedings," in Jonathon Shapiro, *op. cit*. pp. 392-400.

36. 93 S. Ct. at 1294.

37. *Id*. at 1302.

38. *Id*. at 1303.

39. *Robinson* v. *Cahill*, 62 N.J. 478, 496 (1973).

40. *Id*. at 515-516.

41. 93 S. Ct. at 1307.

42. 62 N.J. 478, 492 (1973).

43. *Id*. at 499-501. Also see *Bonnett* v. *State*, 126 N.J. Super 239 (1974).

44. *Id*. at 500-501.

45. *Washington* v. *Davis*, *supra*, 4789-4801.

46. Text of Title I of the State and Local Fiscal Assistance Amendments of 1976, reprinted in Richard P. Nathan and Charles F. Adams, Jr. *Revenue Sharing: The Second Round*, (Washington, D.C.: The Brookings Institution, 1977), p. 243.

47. *United States* v. *City of Chicago*, 405 F. Supp. 48 (1975).

48. *New York Times*, January 21, 1975.

49. *New York Times*, July 24, 1975.

50. 42 U.S.C. 5301.

51. *City of Hartford* v. *Carla Hills* (complete with F. Supp. citation from January, 1976).

52. *New York Times*, November 13, 1976.

53. For a useful discussion of some of these issues, see Astrid E. Merget and William M. Wolff, Jr., "The Law and Municipal Services: Implementing Equity," *Public Management*, August, 1976, pp. 2-8.

Questions About Legal Issues of Service Distribution

(See Answers on next page)

1. What is a "suspect classification"? How does it differ from a nonsuspect classification?

2. What are some of the ways in which courts have drawn lines in equalization cases, denying requests for modifications in service distribution patterns?

3. How have the courts dealt with arguments about the need for services?

4. What is the difference between the standard of proof used by the Court of Appeals in Hawkins v. Town of Shaw and the standard used by the U.S. Supreme Court in Washington v. Davis?

5. How might a purposeful intention to discriminate be shown other than by showing the effects of official action or inaction?

6. What legislation offers the greatest potential for court suits to increase equality of service distribution?

Answers to Questions about Legal Issues of Service Distribution

1. A "suspect classification" is one which classifies people by some invidious, constitutionally illegitimate criterion. Examples are race, nationality, and religion. In service distribution cases, the important "suspect classification" is race.

A nonsuspect classification is any criterion for classifying people that has a reasonable relationship to some legitimate public purpose.

2. Special assessment financing justifies unequal service distribution; unequal conditions may be justified if they result from private action after an equal effort is made by public officials; inequalities in service provision and financing that occur in metropolitan areas or in different parts of states are immune from attack under the equal protection clause; and wealth is not a suspect classification and, therefore, poor people need not be given services equal to those of better off people unless the poor people also are minorities. In particular, the courts are reluctant to consider any equality other than equality of resources.

3. The courts have insisted that plaintiffs in equalization cases demonstrate that they are sufficiently similarly situated in comparison with other people that they should be treated more-or-less the same as these other people. However, the courts have refused to acknowledge the constitutional merit of arguments that dissimilarities between people are sufficiently significant to warrant unequal treatment in favor of those having greater need for service. An example of cases in which this "need" argument was rejected is the school finance cases. In an early case, the argument was made that minority and poor children have a greater need for education services. Therefore, it was argued, they should receive a greater share of available education resources than other children received. The court did not accept this argument.

4. In Hawkins, the Court of Appeals held that the statistical disparity in resource distribution was large enough to constitute a prima facie case of discrimination. Therefore, no proof of intent to discriminate was required. In Washington, the Supreme Court criticized the standard used in Hawkins and said that, in general, some evidence of intent to discriminate should be required. The Supreme Court's language in Washington was ambiguous, however, because the Court also stated that in some instances the factual consequences, such as dramatically unequal service distribution one can infer, may themselves be taken as evidence of intent to discriminate. The implication of Washington is that demonstrating unconstitutionally unequal service distribution will be more difficult to achieve than under the Hawkins standard. How the line will be drawn between permissible and impermissible inequalities remains difficult to anticipate.

5. Perhaps there is a record of explicit requests for service, and for equal treatment, which city officials have failed to respond to favorably. Perhaps it can be shown that requests for service made later by whites in white sections were rewarded with official action sooner

than similar requests from blacks similarly situated in black sections. Perhaps these requests for service by blacks followed a statistical showing by them that their neighborhood(s) did not receive service equal to that of whites in white neighborhoods. It seems unlikely that there would be explicit discrimination written into ordinances or appearing in the minutes of official meetings. Rather it would seem that the effects of official action or inaction standing alone or combined with a pattern of requests, evidence, and denial would be sufficient to support well-documented cases of unequal service distribution on the basis of suspect (racial) classifications. Also see the Supreme Court's suggestions in Village of Arlington Heights v. Metropolitan Housing Development Corporation.

6. State and Local Fiscal Assistance Act of 1972, and Amendments of 1976, and the Housing and Community Development Act of 1974.

CHAPTER 6. MANAGEMENT STRATEGIES

What should be done with the concepts of equity and decision rules and the methods of distributional analysis? Why are they important? Who should use them and how should they be used? These questions have been addressed to some extent in preceding chapters. Here we will examine them, stressing the action contexts in which decisions should be made. This final chapter will be organized to cover the following topics:

What should the roles of local government generalists and department officials be?

How can distributional analysis be used in setting goals?

Which equity concepts should be used for distributing each service?

What decision-making sequence should city managers and mayors engage in to evaluate the equity of service distribution in their communities?

How can decision rules and service indicators be selected to facilitate implementation of specific equity concepts for each service?

Roles of Government Generalists and Department Officials

In interviewing local officials in the cities of Atlanta, Boston, Charlotte, Cleveland, Hartford, Houston, New York City, Pittsburgh, Richmond, and Rochester, and in Fairfax County, we found very little systematic attention to equity and service distribution decisions. We found considerable interest and concern. We found recurring emphasis on attempts to be responsive to wishes of the public. But we found very little systematic data about service distribution. Most important, we found no signs that generalists and department officials had established a system of considering conceptions of equity, decision rules, and service distribution analysis as elements in a decision-making framework.

Government generalists (mayors and council members, city managers, chief administrative officers, planners, and budgeters) tend to have lesser roles than department officials in making service distribution decisions. Generalists' roles increase with capital projects. These are one-time decisions, often involving sizable amounts of money. They are easier to scrutinize and are more visible to constituents than are routine operating expenditures. Still, the initiative tends to rest with department officials in proposing capital projects. Planners may make recommendations about priorities, based on local planning standards. Mayors and managers usually will decide whether to accept or reject proposals. Council members may be particularly sensitive to how many benefits are accruing to the constituents of their districts. Operating decisions, however, are almost entirely the province of department officials. Rarely do generalists get involved except to establish budgetary ceilings, to choose among initiatives proposed by departments, and to participate in the broadest operating decisions having major budget impacts, such as how frequently refuse will be collected.

Why does this separation between department officials and generalists exist? There are many reasons, including division of labor to conserve time and to make use of expertise and the force of custom and tradition that protects departmental self-interest in insulation and autonomy. But other reasons involve the shortage of conceptual development, the absence of a vocabulary for talking about equity, the difficulty of getting a handle on a slippery subject. And then there is the lack of distributional information, the absence of which enfeebles even systematic analysis of equity concepts and decision rules, and the presence of which would enable generalists to participate more actively, just as it would enrich the grasp of department officials' understanding of decision rules' consequences.

There are gains to be made by all the government participants in decisions, and by the public, by making analysis of equity and service distribution more systematic:

Goals can be reexamined and established on a sounder basis.

Evaluation of service effectiveness will be more meaningful.

There is greater potential for public information and access to decision-making.

Explicit attention to who should get what can be institutionalized.

The cumulative effects of different services in specific neighborhoods can be discerned.

A base of understanding and information can be established that will be useful in a wide range of planning, budgeting, and operating decisions.

How services should be distributed among neighborhoods is a political as well as an administrative question. Generalists should play an important role in this process. They usually do not. This lack of significant involvement in decision-making about service distribution will not defer or postpone the question of what is equitable. If generalists do not share in deciding the equity question, decisions about what is fair will be made by default. The administrator has responsibility for a number of operational functions of his department, ranging from purchasing, planning, and personnel to budgeting, administration, and training. He also has responsibility for the distribution of services. In the absence of guidance from generalists, he is required to develop his own standard operating procedures to determine how resources should be distributed, how activities should be programmed, and what results should be achieved. It is not sufficient to maintain that the administrator is uniquely qualified to make these decisions by virtue of his specialized training, technical expertise, access to information, and experience.

Decisions about who should benefit and why from the resources available to city governments are explicitly political. Broad policy guidelines for their deliberation and resolution should be established by generalists.

One of the norms of the city management profession, and of public service generally, is to be equitable in the delivery of services to citizens. That alone is sufficient reason to pay systematic attention to implementation of equity concepts. Local government generalists, whether they are mayors or council members, city managers, budget officers, or planners, have a need to know what the operating departments in their communities are doing. They need information in order to exercise a measure of influence and control.

The essence of control lies in decision rules. It is decision rules that determine outcomes. Decision rules should reflect deliberate choices that have been made about which equity concept or concepts to employ. They should be formulated with an understanding of their distributional consequences. The heart of the process, however, is the formulation and use of the decision rules themselves. Generalists should focus their attention on decision rules and use equity concepts and distributional analysis to aid them in shaping these decision rules.

Setting Goals

Establishing goals is one of the most difficult tasks that government administrators face. One occasion when this difficulty becomes apparent is when administrators try to analyze the effectiveness of public services. Even if indicators of effectiveness can be agreed upon, the problem of how much of a particular indicator is a sign of satisfactory performance is perplexing. How many arrests per 100 crimes reported are enough? How many acres of parks per 1000 residents are enough? How fast should fire response time be? What should be the water pressure at the tap? How many library books should be available per 1000 residents? Should these issues be decided with the aid of national standards? Can they be related to citizen preferences and satisfaction? Is the standard related to objective performance, such as fire response time fast enough to reduce fire losses some identifiable amount?

Reference to standards set outside the community may be helpful in some instances. But reference to standards determined inside the community is essential. One basis for establishing standards is an equity and service distribution perspective. Public officials should decide the extent to which services should move toward, or away from, equal distribution among neighborhoods. If there is to be variation among neighborhoods, how much should there be? Why should variation be tolerated, accepted, or sought?

General distributional goals can be established without systematic data analysis. But specific goals should be based on analysis of the distribution pattern. Public officials should determine who is getting how much of what. They should decide whether the variation that exists is acceptable or not and then set goals for reducing the variation or for perpetuating it. Is a 50 percent variation in arrest rates among police districts acceptable? What should be done to reduce it? Is a 25 percent variation in fire response time acceptable? What changes in fire station location, equipment, and manpower would reduce the variation? Is the variation acceptable in the number of residents in different neighborhoods who are more than one-half mile from a neighborhood park? How should priorities for locating new parks be established?

Goals of this type are useful in a system of management by objectives. If a management by objectives system is going to be useful, objectives need to be established in terms that lend themselves to identifying policies and procedures that will help achieve the objectives. Objectives that will lead to a different pattern of service distribution lend themselves to the selection of policies and procedures that will achieve the objectives. Evaluation of effectiveness in achieving distributional objectives also is feasible. Gathering and analyzing data to describe the service distribution pattern, establishing management objectives, and evaluating effectiveness in achieving objectives are parts of a management strategy.

It is not sufficient to declare that the goal of the police department is to reduce crime. It is not adequate to maintain that the goals of the parks and library departments are to provide recreational opportunities and free books for all citizens. These goals are of little value because they are too vague to permit precise measurement and evaluation. They do not permit the public official to answer the following questions:

1. Do some neighborhoods receive more services than other neighborhoods?

2. Do the poor receive more than the rich? Do whites receive more than blacks?

3. If some neighborhoods receive more services than other neighborhoods, is this pattern justified? Why?

4. Does an increase in crime disproportionately burden some neighborhoods? Does a decrease disproportionately benefit other neighborhoods?

5. Do all citizens have an equal opportunity to take advantage of public recreation services?

6. Are some services not being used by some citizens because these services are not responsive to neighborhood preferences?

7. Are services distributed on the basis of equality (resources, activities, results), need, demand, preference, or willingness-to-pay? Why? Is this pattern equitable?

8. Where should the next new park or branch library be located? Why?

9. Should a budget increase for police be spent to hire more investigators or to provide more patrolmen to handle routine calls for assistance?

10. Should additional funds for the parks department be spent for a new park site in order to equalize travel-time by auto from each neighborhood, or should facilities at an existing park be expanded in order to meet citizen preferences?

Distributional analysis of service patterns can help provide answers to these and many other questions. The information can be used to guide budget preparations and to make changes in departmental operations.

Data Gathering Priorities

Although the data gathering process will be most efficient if data are gathered to serve several purposes, in some instances administrators may gather data solely to analyze service distribution equity. What should trigger this decision? When should administrators decide to gather and analyze data for the purpose of evaluating service equity?

The most important situations in which administrators should gather and analyze data to evaluate the equity of services distribution are:

1. When they believe that an important aspect of a service may be distributed in ways which they consider inequitable, but they are not sufficiently confident of their position.

2. When they believe there is a reasonable chance that a change can be brought about, if their beliefs about service inequities prove to be accurate.

3. When a substantial number of complaints have been made about allegedly inequitable service delivery.

4. When they believe one or more neighborhoods may be the victims of many inequities in service distribution.

When any of these four conditions exist, administrators should consider having data about the relevant aspects of service distribution gathered and analyzed. Data analysis decisions should be based on the following considerations:

1. Which data items are most directly focused on resolving the beliefs of administrators about possible service inequities.

2. Which data items can be gathered at least cost.

3. Which data items will aid the most in meeting related policy-making needs, such as needs for capital programming, evaluation of service effectiveness, and management by objectives.

The first consideration usually will be met best by including at least one indicator each of resources, activities, and results to provide information about these three aspects of the service system. The second consideration tends toward selecting few indicators. But the third consideration tends toward selecting a larger number of indicators to achieve a larger number of policy-making objectives. The development of an information system that is adequate to evaluate service distribution equity can best be achieved if equity analysis is integrated with other types of policy-making analysis.

Which Equity Concepts Should Be Relied Upon For Each Service?

Equity judgments are value judgments. Guidelines can be suggested, but ultimately each individual must decide. The discussion of alternative equity concepts and the implications of applying these concepts to urban services in Chapter 2 was intended to aid administrators in broadening and deepening their thinking about these issues. Here we will suggest which equity concepts to apply to a number of urban services. In doing so we caution readers not to interpret these suggestions as constituting a formula to apply to all situations, nor to conclude that the use of other equity concepts is necessarily "wrong." Furthermore, each service is complex, consisting of many parts, each having a past, present, and future. The equity concepts which one might wish to apply to a service may vary as the service evolves. Still, there are substantial arguments for concentrating on the application of certain equity concepts to each service.

What are our suggestions based on? First, they are based on the general objectives of each service. The first step to take in considering equity concepts to apply is to ask how their application will aid in achieving service objectives. Second, these suggestions are based on common practices in cities. In Chapter 3 on decision rules, we noted that there is variation in the decision rules used in different cities and that the consequences of these decision rules for service distribution also vary. Not enough research has been conducted for anyone to be confident about which decision rules are used more frequently. However, our research has enabled us to determine that the suggestions for selection of equity concepts that we make below are consistent with the practice in a number of major cities. Third, our suggestions reflect our own value judgments. One of our values is that equity concepts should be applied so as to minimize spillover effects —consequences from the behavior of individuals that harm their neighbors. While we believe there is a certain logic to our suggestions, we do not pretend to have overcome our own biases nor to have avoided all misconceptions.

The organization of our suggestions makes use of the conceptual framework presented earlier for analyzing equity implications and for categorizing services.

Routine Services

For routine services, demand is the basic equity concept to rely upon, but equality and need also have some scope. Routine services are services like water supply, solid waste collection, and streets. They are either used every day or people expect them to be available to use every day if they wish. The use of the services constitutes a demand for it. The objective of each of these services includes being available within reasonable limits on demand. If people make reasonable demands for them, the demands should be responded to. For example, turning on a water faucet constitutes a demand that water be supplied. Placing refuse at the curb constitutes a demand that it be collected. Driving a car on a street constitutes a demand that the street be passable and safe.

Neighborhoods also should be equal in one sense of equality. At least an acceptable minimum level of service, or greater, should be provided in every neighborhood, regardless of demands that are made. Need also should play a role where there are spillover effects. With solid waste collection, the debris in front of one house affects the quality of life for neighbors. Greater attention may be warranted in these instances to those with greater need for service, even though they may not demand it.

Protection Services

In distributing protection services, like police and fire protection, administrators should stress the equity concepts need and demand. These services are intended to deal with crises and violent conflicts. The events which constitute the crises are the manifestation of need for the service. Usually these crises or conflicts are accompanied by explicit demands for service.

The location of facilities, equipment, and personnel should be based primarily on need. Placing police where crimes occur frequently and locating fire stations and personnel where the risk of fire is great clearly relates resource deployment appropriately to the achievement of service objectives. They are in a state of readiness to respond when needed. At the same time, their deployment in this way may reduce the frequency with which crises arise.

These services also should be responsive to demands. Demands are the immediate signals that residents want the service provided for them. The response then should be at an acceptable speed with an appropriate array of personnel and equipment.

The norm of equality also should be considered. Each neighborhood needs protection at least up to an acceptable minimum standard. However, the difference between the lowest and highest service levels may be substantial, because neighborhood differences in the occurrence of crimes and fires are so great.

Developmental Services

We have classified libraries and parks as developmental services. They are related to the social and physical development and enjoyment of individuals. Their objective is to facilitate that development and enjoyment. The key characteristic that sets them apart is that use of them is discretionary and at the leisure of residents. Residents choose, at their discretion, to use them or not to use them.

The equity concepts equality, need, and demand each should be used in distributing these services. The distribution of libraries and parks should be equal in the sense that an acceptable minimum or greater level of service should be provided to the residents of every neighborhood. But one of the main conditions which affects the extent to which these facilities are used is their accessibility to residents. Accessibility varies with distance and with the transportation options of residents. It is more difficult for low income residents to travel long distances, since they have fewer transportation resources. Moreover, low income residents can afford fewer alternatives to park and library services that are provided by the private sector. Low income and a shortage of transportation resources are evidence of greater need, in this instance. The objectives of the services to facilitate social and physical development and enjoyment will be achieved more satisfactorily if need is recognized in the distribution of library and park facilities.

Demand also has a worthwhile role, however, because some facilities are used more heavily than other facilities. Therefore, it may be reasonable to provide more equipment and materials in libraries and parks that are used heavily than would be warranted based on the criteria of equality and need. The distinction here is that facilities should be more responsive to need in location decisions, while equipment and materials probably should be more responsive to demand.

Preference and Willingness-to-Pay

Preference and willingness-to-pay have more specialized application. Preferences usually are too costly to discover, if they are not expressed as demands. Their primary use is to provide suggestions for facilities, equipment, and programs to be made available in parks and for materials and programs to be available in libraries. Willingness-to-pay is administratively impractical or contrary to the objectives of many services. It should be applied primarily to special services, golf courses, recreation programs, and the like, which serve a limited portion of the population.

Spillover Effects

The equity concept need deserves special consideration when spillover effects are substantial. Protection services are the clearest example. Demand deserves special consideration when spillover effects are modest and when demand varies significantly. Equality comes into play in that an acceptable minimum or greater level of service should be provided.

Decision-Making Sequence

When an administrator wants to involve himself in distributional issues, he must do so in a sequence of actions. While sequences will vary some from situation to situation, the steps described below are a reasonable sequence to follow.

1. Determine the decision rules that are used to distribute the service.

   a. Obtain written statements from department officials detailing the decision rules that are used.

      Example: Police patrol officers are deployed so that at least 90 percent of the time a patrol car is available to respond to calls for service.

   b. If a particular aspect of service distribution, such as a decision about where to locate a neighborhood park, is influenced by more than one decision rule, then obtain a statement from department officials in which they rank the rules that influence the decision in the order of their importance.

      Example: The first decision rule is to give priority to areas deficient in park acreage based on distance and density criteria. The second decision rule is to give priority to those areas eligible on the first criteria where requests also are numerous.

   c. Obtain supplementary statements, if necessary, explaining why and under what circumstances other factors may influence decisions or circumstances when the rank order of decision rules may be different.

      Example: If a private property owner will donate land for a park, then the distance and demand criteria referred to in 1.b. usually will be overridden and the donated land will be accepted and developed.

2. Evaluate the implications of using these decision rules.

   a. What conception, or conceptions, of equity do the decision rules reflect?

      Example: The decision rule about deploying police patrol officers so that a patrol car is available for response to 90 percent or more of requests for service reflects a demand concept of equity. The emphasis is on response to all calls, rather than establishing priorities.

   b. Estimate who tends to benefit from the use of these decision rules based on:

      - General tendencies that the use of this conception of equity has, drawing on the discussion in Chapter 2 about the implications of equity concepts.

      Example: If police patrol officers are distributed based on FBI index crime rates, one can expect that more police will be assigned to low income areas because crime rates usually are higher there.

- Specific tendencies which seem to apply to the distribution of a particular service in this specific community.

  Example: The specific pattern that will occur by basing police patrol officer distribution on FBI index crime rates can be known only by knowing the specific distribution of crime in a community.

c. Potential beneficiaries should be estimated in terms of areas (sections, neighborhoods, blocks) and types of people (age, income, and racial groupings).

   Example: Potential beneficiaries from relying on requests for neighborhood parks to supplement priorities derived from areas experiencing density and distance deficiencies will depend upon analyzing the characteristics of the residents in high request areas where acreage deficiencies exist. General knowledge cannot provide this answer. Specific data must be obtained.

3. Decide whether you disagree with, or doubt the appropriateness of, the decision rules that are used, by considering:

   a. Which conception, or conceptions, of equity you believe should generally be applied to this service.

   b. Whether the decision rules are consistent with this conception of equity.

   c. Whether you believe the consequences of using the decision rules are desirable.

4. If you question the appropriateness of the decision rules, discuss your concerns with your staff and with department officials. Discuss:

   a. Whether your concerns are justified.

   b. What additional steps to take, such as adopting new decision rules, identifying decision rules used in other communities, and gathering and analyzing data about service distribution in your community.

5. If you are convinced that changes should be made, adopt revised decision rules, after:

   a. Deciding which conception, or conceptions of equity should be applied.

   b. Deciding what general distribution of benefits is appropriate.

   c. Deciding what decision rules would best achieve the distribution sought.

d. Reviewing the implications of the proposed decision rules for total cost, unit cost, service effectiveness, administrative practicality, and political ramifications.

An additional optional step would be to consider the decision rules that are used in other communities, by referring to the discussion of decision rules in an earlier chapter, and/or by contacting officials in other communities.

At this point, no funds have been spent on data gathering and analysis. There are several reasons for spending money on and analyzing data about service distribution independently of considering changes in decision rules. These reasons apply in particular to capital projects. Decisions about where to locate, improve and repair facilities— parks, libraries, fire stations, street lights, streets, sidewalks, water and sewer lines— will be made with much greater perspective, if accurate data describing their distribution are available. With regard to operations, some services depend on accurate data about the phenomena they are concerned with in order to distribute their resources. Police and fire protection are specific examples. Some communities also may be gathering data for some services as part of a routine service monitoring procedure to aid evaluation of service effectiveness.

However, many data may not be available that would be useful for these purposes. In addition, other data may be needed to assess the distributional consequences of current decision rules.

This decision-making sequence also can be reversed.

If resources permit, a systematic data gathering and analysis program can be launched. After service distribution is analyzed, equity concepts and decision rules can be evaluated in the perspective of the findings about service distribution. The goal of evaluating service equity should be related to such goals as capital programming, service effectiveness evaluation, and management by objectives, when decisions are made about which data to gather and analyze. The data gathering and analysis system should be designed to serve more than one purpose. The selection of indicators will be targeted better, if simultaneously, or previously, considerable attention is paid to deliberations about current decision rules, their implications, and possibilities for changing them. The equity analysis system is valuable, whether it is pursued incrementally and ad hoc or comprehensively and systematically. Most administrators will be more convinced of the value of evaluating service equity, however, if they begin by focusing on a subject of special concern to them.

Selecting Decision Rules to Implement, and Indicators to Monitor, Equity Concepts for Services

The discussion of a suggested decision-making sequence makes clear the value of carefully integrating use of equity concepts, decision rules, and service indicators. The value of this approach can be illustrated in another way. For the sake of illustration, suppose that the equity concepts one wishes to apply to an aspect of a service have been selected.

Decision rules to implement those equity concepts then can be identified. The indicators of service distribution that will facilitate judgment about the appropriateness of the implementation of the equity concept also are rather readily discerned. Two examples, one for police and one for parks, will illustrate.

A Police Example

Let us say that police services will be distributed on the basis of the equity concepts of need and demand. What decision rules will implement both of these equity concepts in a reasonable way? Though not the only possibilities, the following decision rules would be reasonable ones to use in implementing these two equity concepts.

1. Distribute police patrol officers roughly in proportion to crime rates for FBI index crimes (need).

2. Respond to all calls for service (demand).

3. Distribute investigators roughly in proportion to FBI index crime rates, or, when available, distribute investigators in proportion to FBI index victimization rates (need).

These three decision rules probably are the most important influences on the distribution of police services. They provide that demands (requests for service) will be responded to, but they provide more police services per capita in high crime (need) areas. Investigators are supposed to develop evidence sufficient to make arrests. These personnel would be distributed in proportion to reported crime rates, or, if available, in proportion to actual victimization rates.

The following decision rules would enable administrators to evaluate whether the service distribution pattern that resulted would be compatible with their intentions.

1. Police patrol officers per 100 annual FBI index crimes per service district (resource indicator).

2. Investigators per 100 annual FBI index crimes per service district (resource indicator).

3. Average response time per service district and range of response times by percent distributions per service district (activity indicators).

4. Arrest rates for FBI index crimes per service district (result indicator).

5. Complaints about response time and response quality per service district (result indicator).

These five indicators would enable administrators to determine how patrol officer and investigator distribution corresponded to crime rates, and, if available, victimization rates. From the response time and complaint data, one can evaluate whether calls are being responded to rapidly enough. From the arrest rate data, one can evaluate whether the quality of police work and the results of that police work are proportionate to the crime rates. Thus, the data enable administrators to assess whether the equity concepts of need and demand are being implemented in ways they believe to be appropriate. Administrators will need to decide how much variation among service districts is acceptable. There is no formula for this judgment. National professional organizations have not proposed guidelines.

A Parks Example

How should funds be distributed for new facilities and equipment in existing neighborhood parks? It has been decided, we will presume, that the equity concepts of need and demand will be used to distribute services. Why? Lower income persons are less able to afford private recreation. They also may have less nearby park space because of greater density in low income areas. Therefore, it is reasonable to give priority to low income areas in dispensing facility and equipment funds to existing neighborhood parks.

Demand helps limit potential excessive emphasis on need. If parks in a low income neighborhood are not used, then they should be given lower priority than they would merit on the basis of need alone. Conversely, more heavily used parks could be given higher priority than would be warranted on the basis of need alone.

The following decision rules would be useful in implementing the concepts of need and demand:

1. From a list of neighborhood park facilities and equipment needing repair or replacement, initial priorities will be selected based on the income characteristics of the neighborhood served, low income ranking first and high income ranking last.

2. This priority list will be modified based on information from park records and park personnel about the usage of these parks and their facilities and equipment, low usage being moved down the priority list.

3. Additions to neighborhood park facilities and equipment will be based, first, on need (income characteristics of the neighborhood), modified, second, by usage of the park to shift priorities established by the first criterion.

4. Replacement and repair of facilities will be given priority over additions, replacement and repair also being considered a manifestation of demand (heavy use). Administrators also should consider whether replacement and repair is caused by vandalism and make judgments whether the risk of recurrence warrants the cost of replacement or repair.

Although the above decision rules are based on the characteristics of the service area, for example, persons within one-half mile of each park, the characteristics of persons outside the service area, but who lack a park within the community's specified acceptable distance, should be assigned to the nearest accessible park in developing a ranking system. Thus, it is important to include numbers of persons outside the service radius but unserved by another park in developing the ranking system. This is another reason why demand should modify need. Presumably these persons outside the service area will be using the park, or parks, nearest to them, increasing use above what would occur from the population within the service radius.

Indicators that would be useful in determining whether the need and demand concepts of equity are being implemented satisfactorily include the following:

Facilities needing repair or replacement per 1,000 persons in service area (and unserved adjacent area).

Equipment needing repair or replacement per 1,000 persons in service area (and unserved adjacent area).

Cost of facilities needing repair or replacement per 1,000 persons in service area (and unserved adjacent areas)

Cost of equipment needing repair or replacement per 1,000 persons in service area (and unserved adjacent area)

The indicator problems associated with the decision rules for these conceptions of equity for distributing facilities and equipment to existing neighborhood parks primarily involve problems of gathering data about the population. Besides gathering data inside the service radius, data will be needed for the area outside the service radius. These data should identify the number of persons. Income data for census tracts or enumeration districts will be difficult to relate accurately to service district boundaries. A substitute method probably will be needed, such as using housing value data available in U.S. Bureau of the Census Block Statistics. Data about park facility and equipment usage also will be needed, or the judgments of park personnel must be relied upon.

The point is, however, that once the subject of concern is clearly identified, such as how to distribute funds to existing parks, the data useful for making that decision also can be identified clearly. The linkages between concepts of equity, decision rules, and indicators of service and population characteristics can be identified by careful thought and systematic attention. What looks like a complex, even esoteric subject when examined abstractly, becomes readily manageable when specific decisions are confronted.

How to Relate Service Indicators to Equity Concepts

The most useful equity perspectives are equality, need, and demand. Most of the same service indicators can be used to evaluate whether each equity concept is being met satisfactorily. What each service indicator should be compared with changes for each equity concept. In Tables 1 and 2 below, examples are given of comparisons that will aid in evaluating the achievement of equality, need, and demand for police and park services.

To evaluate equality, police indicators should be compared with population measures. To evaluate need, police service indicators should be compared with crime rates. To evaluate demand, police service indicators should be compared with calls for service.

Table 1. Relating Police Service Indicators to Equity Concepts

Equality

Patrolmen (investigators)/1,000 residents[1]
Mean response time/district
Arrest (clearance) rate/district
Percent stolen property recovered/district
Crime rate/district

Need

Patrolmen (investigators)/100 Part 1 FBI index crimes (or other crime rate indicator, such as victimization rate)
Number of arrests (cases cleared)/100 Part 1 FBI index crimes (or other crime rate indicator)
Property value recovered/value of property stolen

Demand

Patrolmen/100 calls for service
Mean response time/100 calls for service (and for different types of calls)

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[1] Data should be reported for service districts and/or beats.

For parks, the three most useful equity concepts also are equality, need, and demand. To make judgments about equality, park service indicators should be compared with population indicators (per capita, per 100 and per 1,000 residents) and age indicators (persons under age 18, for example). To make judgments about need, service indicators should be compared with general need indicators such as mean housing value or income. To make judgments about demand, service indicators should be compared with use data. These relationships are illustrated below in Table 2.

Table 2. Relating Park Service Indicators to Equity Concepts

Equality

Acres of community-serving park land/1,000 residents[1]
Number of residents by neighborhood more than 1/2 mile from a neighborhood park
Number of facilities (by type)/1,000 residents
Operating expenditures/1,000 residents
Citizen reasons for non-use of the park nearest their residence

Need

Acres of community-serving park land/index that includes mean housing value or income as one variable[2]
Number of residents by neighborhood more than 1/2 mile from a neighborhood park/mean housing value or income
Number of facilities (by type)/index that includes mean housing value or income as one variable
Operating expenditures/index that includes mean housing value or income as one variable
Citizen reasons for non-use of the park nearest their residence/mean housing value or income

Demand

Acres of community-serving park land/1,000 users
Number of facilities (by type)/1,000 users
Operating expenditures/1,000 users
Number of users of community-serving parks/1,000 residents[3]

[1] These relationships also can be described for persons under age 18. Calculations can be made per 1,000 residents or per 100 residents. If residents live within the service area or more than one park, assign them to only one park, the park closest to them unless separated by a barrier. Do not count residents twice; double counting will invalidate all the calculations.

[2] The index also probably should include a population and age variable. For examples of how to construct indices, see Chapter 6 Management Strategies in William H. Lucy and Kenneth Mladenka, A Handbook on Analyzing the Distribution of Park Services, (Washington, D.C.: National Training and Development Service, 1978).

[3] If data about all types of users of parks are not available, limit the analysis to users of programs and facilities where counts of users are made.

These examples for police and parks illustrate that the key to evaluating equality, need, and demand is to select appropriate indicators with which to compare service indicators. These indicators must stress population to evaluate equality. To aid in evaluating need, they must be relevant to need, either by assessing the phenomenon directly, as with police services, or by selecting appropriate socio-economic indicators, as with park services. To aid in evaluating demand, indicators of use of services and requests for services are essential.

A Final Word

Why bother with evaluating the equity of urban service distribution?

The distribution of services is the principal determinant of who receives the benefits of local government activities. That is ample reason to analyze and evaluate service distribution.

Generalist administrators have additional reasons to be concerned. City managers, mayors, budgeters, and planners often have only a modest role in influencing important aspects of service distribution. Generalists should have a larger role. They need to know what operating departments are doing, why they are doing it, and what the consequences of departmental decisions are.

Obtaining more information is one method of increasing influence and control. Other steps are helpful. Equity concepts should be understood. The purpose of the methodological framework for selecting indicators needs to be grasped.

Decision rules constitute the heart of the process of influence and control. Service distribution consequences are determined by decision rules. Administrators who want to evaluate service equity and who want to increase their influence over service distribution consequences should focus their attention on decision rules.

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HANDBOOK FOR ANALYZING THE DISTRIBUTION OF SOLID WASTE COLLECTION SERVICES

Module 2

Developed by

DIVISION OF URBAN AND ENVIRONMENTAL PLANNING,
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CHAPTER 1. THE PARADOX OF URBAN SERVICE DISTRIBUTION: ROUTINE AND MYSTERIOUS

The provision of most local public services involves a paradox. Most services are routine. Nearly everyone is familiar with them— refuse collection, water, parks, recreation, libraries, sewage disposal, police, fire, bus service. Yet little is known— by citizens, by elected officials, even by administrators and planners— about who gets how much of them. Deciding who gets what is the essence of politics. The provision of services to people is the essence of administration. But administrators rarely systematically analyze who gets how much of the services they distribute. Instead, they use decision rules— standard policies and procedures— to routinize service distribution. These rules emerge from professional standards, from history and custom, from the pursuit of efficiency, from aspirations for effectiveness. What are the consequences of these decision rules? What are the alternatives administrators should consider in deciding whether a service distribution pattern is equitable? What are the main conceptions of equity? How are decision rules related to service distribution patterns? How should service distribution be measured and analyzed?

These are some of the questions that are examined in this handbook about the distribution of solid waste collection services. The objective of our discussion of these questions is an attempt to make equity a concept that solid waste collection administrators and other local officials can use in practicing their craft, just as they use the concepts of efficiency and effectiveness.

Uses of an Equity Perspective

An equity perspective for analyzing the distribution of solid waste collection services has two main uses.

1. Re-evaluate and revise principal policies (decision rules). The most important of these policies probably are:

   a. Should every part of the city receive the same number of regular refuse pick-ups per week or should the frequency of collection vary?

   b. How frequently should bulk refuse be collected? Will all neighborhoods be served adequately by this policy?

   c. How frequently should streets be cleaned? How should the frequency vary among neighborhoods?

   d. Should there be a special charge for any service— regular collection, yard brush, and bulk refuse?

2. Make modest changes in one or more aspects of solid waste collection services based on an analysis of service distribution in order to make these services more consistent with the conception of equity favored by public officials.

Decision rules have major implications for the equity of service distribution. Careful analysis of service distribution is needed before one can identify clearly who is benefitting from the use of a particular set of decision rules.

Solid waste collection administrators do not seem to have much sound information about how the services they provide are distributed. In interviewing solid waste collection administrators, we asked: Does it cost more per person to collect refuse in low income neighborhoods or in upper income neighborhoods? Responses included: "It costs more in low income neighborhoods;" "I don't know;" "More in upper income neighborhoods because houses are farther apart;" and "There isn't much difference." None of the respondents had collected data about service costs in their community, and none of them knew of studies about costs of providing services to different kinds of neighborhoods in other communities, nor had administrators or planners conducted systematic studies of service distribution on some basis other than the cost of providing service.[1]

On the other hand, local officials often consider whether neighborhoods have differing needs for services, sometimes leading to variations in the services provided. Variation in street cleanliness often is used as a basis for varying frequency of street cleaning service. In New York City, need is used explicitly as the basis for varying the frequency of solid waste collection from five times a week in some neighborhoods to twice a week in others.

Service Effectiveness

Administrators should evaluate services in terms of achievement of service objectives. Varying degrees of achievement of service objectives suggest whether services are more, or less, effective. Judgments about service effectiveness should be made cautiously, because conditions often are influenced by events other than those involving the service itself. But one aspect of assessing service effectiveness is clear. It is not adequate to determine community-wide street cleanliness conditions. It is not acceptable to have some neighborhoods with clean streets and others with dirty streets. Geographic distribution is an integral part of service effectiveness. Administrators should analyze service distribution as a basis for estimating effectiveness and in order to provide a basis for making judgments about service equity.

The essence of the methodology proposed is that multiple indicators of service distribution should be used. A framework should be used that encourages attention to the entire service delivery process. The framework proposed here uses four categories to analyze service distribution. These categories are resources, activities, results, and impacts. The first three categories have the greatest usefulness. Often the analysis of service distribution has relied upon resource indicators— expenditures and personnel in particular. Indicators of service activities and results also should be stressed. In fact, service analysis that depends upon resource indicators may be seriously misleading.

Purpose of This Handbook

The purpose of this handbook is to show administrators and students how the concepts of equity and service distribution can be useful in local solid waste collection planning and management. Efficiency and effectiveness are traditional goals of public administration. Methods have been developed to make these goals operationally useful. Equity is espoused, but its meaning is obscure. The undoubted importance of equity makes its meaning worth searching for. Equity will be a more useful concept, if its several meanings are recognized and if administrators, and others, try to select carefully the particular conception of equity most appropriate to their service, circumstance, and values. The key to operationalizing equity is to develop methods to analyze service distribution and to identify the decision rules whose use leads to a particular pattern of service distribution. Concepts of equity, decision rules, and service distribution patterns then can be related to each other and be re-evaluated. Through this interaction, local officials can decide whether to change any, or each, aspect of the service distribution network— the dominant conception of equity, the decision rules, and/or the service distribuyion pattern.[2]

FOOTNOTES

1. References in this chapter to decision rules and processes used in various communities are based on interviews with local government officials conducted by the authors.

2. The book and handbooks that accompany this publication, by the same authors, deal with police, parks, and libraries, and the general subject of Equity and Urban Service Distribution. They examine equity concepts, decision rules, and service distribution information systems in detail for these services. See Equity and Urban Service Distribution, (Washington, D.C.: National Training and Development Service, 1978).

QUESTIONS

In reflecting on this introduction to equity and the distribution of solid waste collection service, and in reading the chapters that follow, these are some questions to which answers should be found:

1. What are some of the important conceptions of equity which urban managers should consider?

2. What are decision rules, how are they used, and what influence do they have on service distribution?

3. What is the relationship between conceptions of equity and decision rules?

4. How should service distribution be measured and analyzed?

5. How can conceptions of equity be related to indicators of service distribution?

6. Why is geographic service distribution analysis important in analyzing the effectiveness of local public services?

7. How can equity concepts, decision rule analysis, and analysis of service distribution patterns be used in making decisions about solid waste collection services?

CHAPTER 2. EQUITY, DECISION RULES, AND SOLID WASTE COLLECTION

In this chapter we will discuss five conceptions of equity with examples of how each can be applied to solid waste collection services. This chapter also will include an explanation of how equity concepts can be given operationally meaningful content. Then ways to apply equity concepts to practical decision-making are discussed. Finally the role of decision rules in implementing conceptions of equity will be examined.

Conceptions of Equity

Whether services are distributed equitably is a matter of judgment. Judgments must be applied to the facts. One type of judgment concerns which fact, or set of facts, about service distribution is most important. Another type of judgment concerns what conception of equity is most applicable to each service separately and to all services cumulatively. We distinguish five conceptions of equity. In each instance, an example is given of one implication of the conception of equity.

1. Equity as equality. Services should be distributed equally to residents of each neighborhood. For example, the location of solid waste collection pick-ups should be at the curb in each neighborhood.

2. Equity based on need. Services should be related directly to the need that different people have for the services (e.g. densely populated neighborhoods with little storage space for refuse should receive more frequent solid waste collection service than other neighborhoods).

3. Equity based on demand. Services should be distributed in proportion to the demand for them (e.g. in neighborhoods where there are a high percentage of complaints about dirty streets, more street cleaning service should be provided than in low complaint neighborhoods; also all refuse set out should be collected, the setting out constituting a demand for service).

4. Equity based on preference. Services should be related to preferences. Preferences include articulated and unarticulated demands. Not everyone who wants a service requests it or uses it (e.g. the location of collections, at the curb or side of the residence, should be based on a survey of residents to determine their preferences).

5. Equity based on willingness-to-pay. Willingness-to-pay measures both the presence and intensity of demand. People must choose to make an expenditure, and therefore they will not have those same funds to make some other expenditure (e.g. users should pay for solid waste collection proportionately to the amount of solid waste they generate for collection).[1]

We propose that public officials relate equity concepts to geographic service distribution patterns. Public officials' judgments can be more satisfactorily expressed, if they are based on information that is appropriately categorized and systematically analyzed.

Applying Equity Concepts

In making decisions, how can equity concepts be applied? At the analytical stage, two steps should be taken:

1. What advantages and disadvantages does each equity concept have if applied to a service?

2. For each aspect of the service, which equity concept seems most appropriate?

The main questions to ask in determining advantages and disadvantages include these:

First, who will benefit if the concept is used?

Second, will there be spillover effects? That is, will neighbors and/or residents outside a neighborhood be adversely affected if an equity concept is applied to solid waste collection within the neighborhood?

Third, is it administratively practical (cost effective and politically reasonable) to apply the concept?

What are the advantages and disadvantages of applying the five equity concepts (equality, need, demand, preference, and willingness-to-pay) to solid waste collection services?

Who Will Benefit?

First, consider equity as equality. Who will benefit from basing equity on the concept of equality depends upon how equality is measured. The answer differs depending on whether equality is measured in terms of resources, activities, or results. The meaning and use of these terms—resources, activities, and results— is discussed in Chapter 3. For now, an illustration of the implication of using each type of indicator will suffice. Expenditures are an indicator of resources. Equality could be interpreted to mean that the cost of servicing each household was the same. That would require that the same amount of personnel time and equipment were used to service each household, or it would mean that compensatory services (extra street cleaning, picking up loose refuse, and so on) would be provided to even out service costs. Personnel and equipment costs will vary depending on the volume and weight of refuse put out for collection by each household and depending on the distance between households. It seems unavoidable that greater distances between households and greater amounts of refuse per household (or per capita) will be associated with higher personnel and equipment costs. Since middle and upper-income households consume more, have bigger yards and more yard waste,

Table 1. Typical Residential Rates for Collection of Unrestricted Quantities of Solid Wastes in 1973

City and Type of Dwelling	Service Charge Period	Single Unit Rate, $	Each Additional Building Unit, $
Burbank, Calif.	Month		
Single-family		2.00	
Multiple dwelling		1.50	1.50
Multiple dwelling, if services not used		0.90	0.90
Lynwood, Calif.	Month		
Single-family		1.35	
Multiple dwelling		1.05	1.05
Oxnard, Calif.	Month	1.75	2nd unit - 1.50 3rd unit - 1.25 Each add'l - 1.10
Santa Ana, Calif.	Bi-Monthly		
Single-family		2.60	
Duplex		4.20	
Triplex		5.80	
Ft. Lauderdale, Fla.	Month		
Single-family		2.87	
Multiple dwelling		2.80	2.00
Tampa, Fla.	Month	3.00	1.50
Des Plaines, Ill.	Month	1.50	1.50
Cedar Falls, Ia.	Month	2.00	2.00
El Dorado, Kan.	Month		
Single-family		2.50	
Multiple dwellings and Mobile Homes		2.50	1.50
Albuquerque, N.M.	Month		
Single-family		3.00	
Duplex		5.00	
Triplex		7.50	
Lawton, Okla.	Month	1.50	0.75

Source: Solid Waste Collection Practice, 4th ed., (Chicago: American Public Works Association, 1975).

and live in bigger houses greater distances from each other than do low-income households, it seems probable that middle and upper-income households cost more to service than low-income households. We have not found data that confirm this belief, though some information exists indicating that it probably is accurate. For example, when service charges are levied, the charges often are higher for single family units than they are for multiple dwellings (see Table 1). Cost differences could be compensated for on a neighborhood basis. Neighborhoods could be placed in categories, depending on the mean cost of servicing households within them, and services could be varied to make the cost of servicing each neighborhood more similar. Frequency of collection could be varied (once, twice, or three times per week). Street cleaning frequency could be varied. Inequalities still would exist within neighborhoods, since it would be unmanageable to vary services to individual households next to one another. Some inequalities still would exist between neighborhoods, but the differences could be reduced.

The frequency of collection is an indicator of an activity. The activity is collecting refuse. The indicator of the activity, or process, is the time intervals, the frequency, at which collection occurs. One could interpret equality to mean that each household received the same frequency of collection. This would mean that each household, regardless of the amount of refuse it generated, would receive the same frequency of service. Therefore, this measure of equality has substantially different distributional implications than does an equal expenditure measure of equality. Those who generate more refuse tend to receive more service as measured by expenditures, if activities, as measured by frequency, are equal.

The cleanliness of streets after collection and after street cleaning is an indicator of results. It seems unlikely that equal frequency of collection, and street cleaning, will produce equally clean streets. It seems plausible that equality in expenditures would come closer to equality of results than would equal frequency. Cleanliness seems, by visual inspection, to be associated with low density. There are many reasons why it is difficult to keep the public areas of dense neighborhoods clean. More people use less space; the refuse, like the population, is highly concentrated. Equality of street cleanliness, therefore, may require more expenditures in dense low-income neighborhoods. Thus, low-income neighborhoods probably would tend to benefit from use of an equality concept of equity and a result-based indicator of equality.

Need as a basis for equity also would tend to benefit low-income neighborhoods. These neighborhoods are likely to have less storage space, less adequate storage containers, more refuse placed for longer periods in public places, more stray dogs, fewer owner-occupied residences, as well as more people in less space. The objective of refuse collection services, to promote the cleanliness, health, and safety of the community, determines the definition of need. It seems likely that there will be more threats to cleanliness, health, and safety in low-income neighborhoods than in other neighborhoods.

Most communities respond routinely to demands in that when refuse is placed out for collection, it is picked up, provided the rules are followed. Demand for services also can be measured by requests and complaints. With solid waste collection services, the complaints may be few. This has been the experience, for example, in Atlanta, Charlottesville, Houston, Fairfax County, and Richmond. If complaints are few, then the pattern of responses to them will have little bearing on service distribution. However, solid waste collection administrators interviewed in several cities said there were more complaints from middle-income and upper-income neighborhoods.

Residents in various neighborhoods may have different preferences for service. Some neighborhoods might prefer once a week collection, others twice a week collection. Some might prefer curb collection and others side-of-the-house collection. If charges were the same regardless of the service provided, service distribution benefits would vary in accordance with varying preferences. The preference concept has little practical applicability to solid waste collection services and will not be discussed hereafter.

If preferences, such as these, are linked to charges sufficient to pay for the differences in service provided, then a willingness-to-pay system is in effect. Service beneficiaries then will vary, but the cost of the service will vary in proportion to the service differences. Similarly, regular collection services can be varied on the basis of weight, or volume, of refuse generated. If charges are based on bags of refuse, then different charges could be levied even though frequency of service was the same to everyone. Those who consumed and disposed of more, then, would have to be willing to pay for doing so. Both benefits and costs, therefore, would vary with the amount of service desired, and service could be varied from household to household depending on the amount of refuse generated. Under this system, no one would seem to benefit more than anyone else. However, spillover effects, which are discussed below, are a problem.

Will There Be Spillover Effects?

Spillover effects refer to the side effects of a policy. A policy that may have satisfactory consequences for the main objective of the policy may have unsatisfactory side effects. With regard to solid waste collection, spillover effects would affect neighbors, but probably would be contained within the neighborhood rather than spill over into other neighborhoods.

Equity as equality needs to be considered in terms of equality of expenditures, equal frequency of collection, and equal cleanliness as a consequence of collection and street cleaning. Equality of expenditures probably tends to benefit better-off neighborhoods more than other neighborhoods. Equal frequency of service would tend more strongly in the same direction. Equal cleanliness, on the other hand, would tend to offset spillover effects, attempting explicitly to contain them. Equal frequency or equal expenditures could be associated with satisfactory service throughout the community so that spillover effects would be of little consequence.

Equity based on need also explicitly addresses spillover effects. It stresses attention to densely populated areas in which close proximity makes the effects of neighbor upon neighbor particularly strong. The spillover effects of equity based on demand (complaints) probably will be very small, because the impact of this equity concept on service delivery practices is likely to be meager. The willingness-to-pay system has few spillover effects for basic refuse collection service, provided that everyone does indeed pay to dispose of garbage and trash that is generated routinely. This system, however, encourages people to avoid the collection system, thereby avoiding paying for it. Vacant lots and abandoned buildings may become handy garbage dumps. Then the spillover effects on neighbors may be massive. Attempts to side-step the need to pay for service may be especially prominent with regard to large household items (refrigerators and stoves and furniture) and with yard brush. Thus, willingness-to-pay has serious spillover implications.

Is the Equity Concept Administratively Practical?

In asking whether the equity concept is administratively practical, we are interested in whether it is cost effective and politically reasonable. Cost effective refers to whether there is a satisfactory relationship between the cost of using the concept for service delivery and the effectiveness of the service provided in that way. Politically reasonable refers to judgment about the reactions of voters to use of the concept.

Equal expenditures is a difficult concept to implement. Some variation in service costs always exists. A judgment must be made whether different service levels should be provided in order to equalize service costs.

Attempts to equalize expenditures can be combined with reliance on other equity concepts. Equity based upon need may lead to similar changes in expenditure patterns. Using willingness-to-pay for yard brush collection may reduce expenditure inequalities without increasing spillover effects. Equality of street cleanliness may be more nearly approached by varying street cleaning frequencies, which also may tend to equalize expenditures. These changes may be more administratively practical than changes in collection frequency and location.

Equity as equality using an activity indicator such as frequency of collection is an equity concept that is easy to implement. The activity, frequency of collection, is the same for everyone. It appears fair. No studies are needed. No variation in service quantities are needed. It is the simplest system.

Equality of results is more complicated. The basic result sought is that everyone's refuse is picked up on the prescribed schedule. Zero missed collections would be the goal. This too is relatively easy to achieve. Complications arise when additional results are sought. Street cleanliness may be the indicator of results. Equal frequency of collection and equal expenditures for collection and street cleaning are very unlikely to lead to equally clean streets. The simplest system to implement in pursuit of equal street cleanliness may be to use the same frequency of collections, but to vary the frequency of street cleaning, perhaps substantially.

Equality based on demand is easy to implement in picking up refuse routinely when placed out for collection or if demand is interpreted as complaints, complaints are relatively few, and the administrative response is to deal only with what is complained about. For example, if a complaint is about a missed collection, then the refuse may be picked up the same day. If the complaint is about a damaged garbage can, then administrators should decide whether to replace the can or not. On the other hand, it would not be reasonable to provide one part of the community with twice-a-week collections while another part received only once-a-week collection based solely on differences in complaint levels.

Equity based on willingness-to-pay is easy to implement if broad categories are used. For example, occupants of single-family residences may pay one rate and occupants of multiple dwellings may pay another rate. Bulk refuse collection and yard brush collection could be charged for separately, with some paying for the service and others providing the service for themselves. The administrative complications arise if willingness-to-pay is defined more precisely. For example, if each additional bag of refuse collected must be paid for individually, the process of charging for the service becomes administratively complex. One system that has been used is to charge customers for plastic bags at the full cost of collecting and disposing of the refuse, rather than only for the cost of the bag itself. Refuse will not be picked up unless it is bagged in this way. Only authorized bags from authorized dealers can be used. Communication and transportation problems with this system occur, causing some spillover effects.

Decision Rules

Decision rules are the general procedures by which a service is provided. They come in different types, Some decision rules establish the basic conditions by which the service is offered, such as determining there will be solid waste collection once a week. Other decision rules apply to the activities of work crews, such as rules about picking up loose refuse.

The decision rules having the greatest distributional impact probably are rules about the frequency of regular refuse collection, frequency of bulk refuse collection, and frequency of street cleaning. Decision rules used in nine large cities and one urban county are reported in Tables 2, 3, and 4. In six jurisdictions, the frequency of regular refuse collection is the same in all neighborhoods. In four jurisdictions, regular collection frequency varies based on neighborhood density. The greatest variation is in Boston, from once a week to three times a week, and in New York City, from twice a week to five times a week (see Table 2).

With regard to bulk refuse collection, only Pittsburgh made collection at a few specified times per year, once a year in this instance. Six jurisdictions made collections once each week. Three jurisdictions made collections on a call-for-service basis, with the maximum wait for service being one week or less (see Table 3).

Table 2. Regular Solid Waste Collection Frequency

With regard to frequency of pick-ups in residential areas, do collection crews make pick-ups:

	Same in all neighborhoods 1	Vary based on neighborhood density 2	Vary based on neighborhood litter 3
Atlanta	No	Yes (1,2 wk)	No
Boston	No	Yes (1,2,3/wk)	No
Charlotte	Yes (3/wk)	No	No
Cleveland	Yes (1/wk)	No	No
Fairfax	Yes (1/wk)	No	No
Hartford	No	Yes (one area gets 2/wk)	No
New York City	No	Yes (2/wk to 5/wk)	No
Pittsburgh	Yes (1/wk)	No	No
Richmond	Yes (2/wk)	No	No
Rochester	Yes (1/wk)	No	No

Key:

1. The same number of days per week in all neighborhoods, regardless of neighborhood population density and street (or alley) litter conditions.
2. A varying number of days per week in different neighborhoods based on neighborhood population density.
3. A varying number of days per week in different neighborhoods based on periodic evaluation of street (or alley) litter conditions.

Table 3. Bulk Solid Waste Collection Frequency

With regard to pick-up of bulk items (refrigerators, furniture and the like), do collection crews make bulk pick-ups:

	Few times/yr. 1	How many? 2	Call-for Basis 3	Max. Wait 4
Atlanta	No	1/wk	No (plan to switch to call-for)	
Boston	No	1/wk	No	
Charlotte	No		Yes	5 days
Cleveland	No	1/wk	No	
Fairfax	No		Yes	1 wk
Hartford	No	1/wk	No	
New York City	No	1/wk	No	
Pittsburgh	Yes	1/yr	No	
Richmond	No		Yes	1 wk
Rochester	No	1/wk	No	

Key:

1. At a few specified times per year?
2. How many if yes.
3. On a call-for-service basis, with pick-ups being made after an appropriate wait (a few days or two or three weeks), to allow time to accumulate other pick-up locations in reasonable proximity to each other?
4. If yes, what is the maximum wait?

Table 4. Street Cleaning Frequency

With regard to street cleaning, are work crews assigned on the basis of:

	Equal St. Cleaning/Mo. 1	Equal St. Cleaning/Mo. with add. in Commercial 2	Unequal based on Evaluation 3	Unequal based on Other 4
Atlanta	No	No	Yes	
Boston	No	No	No	Day after refuse pick-up
Charlotte	No	Yes	No	
Cleveland	No	Yes	No	
Fairfax	State responsible for street cleaning			
Hartford	No	Yes	No	
New York City	No	No	Yes	
Pittsburgh	No response obtained			
Richmond	No	No	Yes	
Rochester	No	Yes	No	

Key:
1. An equal number of street cleanings per month in all residential and commercial areas?
2. An equal number of street cleanings per month in residential areas, with additional street cleaning in commercial areas, especially downtown?
3. An unequal number of street cleanings in different residential areas in relation to periodic evaluations of cleanliness of streets?
4. An unequal number of street cleanings in residential areas due to other criteria?

Several decision rules are used for street cleaning. Four jurisdictions provided the same number of residential street cleanings per month with more frequent cleaning of streets in commercial areas. Three jurisdictions varied street cleaning based on periodic evaluations of street cleanliness. The greatest variation was in New York City, where the variation was from once every two weeks to six times a week in some residential areas. One jurisdiction, Boston, cleaned streets in residential areas the day after refuse collection. Refuse collection varied in Boston from one to three times per week, based on neighborhood density (see Table 4).

Other decision rules are important. The location (curb, side or back, or alley) of collection, the means of payment for services– taxation or fee-for-service, the availability of special services– location and size of refuse collected to fit special circumstances, the hours of collection, the use of bags, the way in which complaints are handled, coordination with the health and fire departments, rules for each of these aspects of solid waste collection services may have important distributional consequences.

The data reported in Tables 1 through 4 indicate that decision rules vary considerably. In Atlanta, Boston, and New York City, for example, solid waste collection services tend to be based on need, though not in identical ways. In Cleveland, Pittsburgh, and Rochester, services seem to be based on equality of activities. The other jurisdictions fall between these poles. Officials should consider whether decision rules are having desirable distributional consequences.

Implications of Decision Rules

The implications of decision rules can be discerned more readily if a set of rules for solid waste collection are evaluated.

New York City

The frequency of regular collection varied, in 1977, from twice a week to five times a week. Denser areas that generated more refuse received more frequent collections. In 1973, prior to the budget cutbacks in New York City, the variation was from twice a week to nine times a week.

Bulk refuse is collected routinely, the second pick-up day of the week on the regular collection schedule.

Street cleaning varies from once every two weeks to six times a week, denser areas with dirtier streets receiving the most frequent collections.

All services are paid for from general tax revenues.

This set of decision rules is strongly oriented toward service distribution based on a need equity standard. Each aspect of the service is varied in tune with need. Need is interpreted as being based on density, volume of refuse, and street litter conditions. No extra charges are imposed, so who pays for the service is a function of who pays taxes for services in general.

Atlanta

The frequency of regular collection varies from once a week for single family units and residences with five units or less to twice a week for residences with six units or more.

Bulk items are collected once a week with other refuse. Consideration was being given, in 1977, to switching to a call-for-service system to attempt to reduce the length of time that bulk refuse is left at the curb.

Street cleaning in residential areas varies from once every two weeks to once every three or four weeks based on an evaluation of street cleanliness that was made more than one year earlier.

These services are paid for with general tax revenues. However, if a resident wants garbage collected from the back of the residence, this service costs $150 extra per year.

Service is provided less frequently than in New York City. Service also varies less among neighborhoods, but the variation is essentially on a need basis. Willingness-to-pay for an additional service--back of the residence collection--also is provided.

Fairfax County, Va.

Frequency of collection is once a week for everyone served. The county serves 20 percent of the residences and private haulers serve the balance. However, the county collects only from single family dwellings and townhouses. All apartments are served by private carters.

Yard brush and small bulk items are picked up by Friday if they are placed at the curb on Monday. A call-for-service must be placed for a special truck to pick up items like washers and refrigerators.

Street cleaning is a state, not a county, function.

The rate is $76 per year for all customers for regular service. No special fee is charged for yard brush or for bulk items.

According to a 1976 study by solid waste collection administrators, the average tonnage of refuse collected per dwelling per year by the county varied from an average of 1.18 tons on one route to a high of 2.13 tons per dwelling on another route. The average for all routes was 1.57.

The variation for bulk items and yard brush was from a low of 0.07 tons per dwelling per year on one route to 0.35 tons on another route. The average per route was 0.21 tons.

This variation makes it evident that some residents get more service at the same cost as other residents who get less service. Taxes vary some by income, primarily through property and sales taxes. If wealthier people use more service, they also pay more for it, when payment is from general taxes. But when everyone pays the same fee, the effect may be for middle income and low income residents to subsidize better-off residents. The tendency for this to happen is amplified when the frequency of collection is the same in all neighborhoods. Thus, basing the solid waste collection system in Fairfax County on equal frequency of collection and equal fees probably creates a fairly strong bias in favor of more service for persons who are better off than others.

The importance that fee systems may have for influencing the equity of service distribution can be seen in the following table:

Table 2. Methods Used to Finance Solid Waste Collection in 396 U. S. Cities in 1973.

Percent of Cities Population in Thousands

Method	Total	0-5	5-10	10-25	25-50	50-100	100-250	250-500	500-1000	Over 1000
General Tax	54.3	66.7	41.7	50.0	49.1	60.0	56.7	50.0	66.7	80.0
Service Charge	30.8	16.7	50.0	34.4	34.9	28.0	30.0	25.0	13.3	20.0
Tax Plus Charge	12.6	16.7	8.3	14.1	13.2	11.0	13.3	14.3	13.3	0.0
Other	2.3	0.0	0.0	1.6	2.8	1.0	0.0	10.7	6.7	0.0

Source: American Public Works Association, Solid Waste Collection Practice, 4th ed., (Chicago: American Public Works Association, 1975), p. 262.

In communities ranging in size from 5,000 to 500,000 residences, more than 40 percent of these communities pay for solid waste collection by some method other than the general tax fund. The Fairfax County example illustrates that there may be important equity implications in this practice.

Richmond

Regular refuse pick-ups are made twice a week in all neighborhoods. Bulk pick-ups are made on a call-for-service basis once a week. Street cleaning frequency is based on evaluations by a supervisor of street cleanliness and range from once a week to once in three months.

Seventy-five percent of pick-ups are in alleys, 15 per cent at the curb, and 10 percent are at the rear of the house. The rear of the house collections are in more affluent areas of the city. All services are paid for with general tax funds. The net effect of these decision rules is that those who generate more refuse get more service. Richmond solid waste collection officials believed that poor neighborhoods generated more refuse, but they had no data to support their belief. Our explanation of solid waste generation discussed earlier--greater consumption by better-off persons results in greater amounts of refuse--and the indirect evidence about variations in private collection rates for single-family and multiple-dwellings leads us to believe that the opposite is the case, that better-off neighborhoods generate more refuse. The consequence of this would be that better-off neighborhoods would receive more service.

Conclusion

These snapshots of solid waste collection policies used in four jurisdictions make it evident that decision rules vary widely. The consequences for different kinds of people and different neighborhoods also vary greatly.

There may be a tendency for public officials to assume that the way things are done in a particular place is the only way they should be done. In fact, the variety of decision rule combinations is immense.

The general effects of basic policies on solid easte collection can be estimated, as we have done here. Confirmation of these effects, and, more importantly, analysis of the extent of the variation in service characteristics among neighborhoods requires use of systematic procedures.

Self-Evaluation Questions

1. What are five conceptions of equity?

2. What are decision rules?

3. Illustrate how one or more decision rules implement each conception of equity?

4. How can conceptions of equity be used in making decisions about solid waste collection?

5. Who do you believe will benefit from the use of each conception of equity?

6. What spillover effects do you anticipate from the use of each conception of equity?

7. Is each conception of equity administratively practical?

8. What are three examples of decision rules used for the basic aspects of solid waste collection in two jurisdictions? How do the likely beneficiaries of these two sets of decision rules differ?

CHAPTER 3. METHODOLOGY FOR ANALYZING URBAN SERVICE DISTRIBUTION

In this chapter we will discuss methods of measuring the distribution of urban public services. Categories of analysis will be suggested; data will be classified as indicators of resources, activities, results, and impacts. Consideration will be given to interpretations of combinations of these indicators, including consideration of how these indicators can be used to identify the conception of equity which seems to be reflected implicitly in the data.

Categories of Analysis

The first problem that an analyst confronts is how to measure services. Indicators must be selected. These indicators should be related to the objectives that the service is intended to meet. Services have more than one objective. Refuse collection objectives can be described as: Promote cleanliness, health, and safety of the community by removing garbage and trash while minimizing inconvenience to citizens. Cleanliness, health, safety, and inconvenience need to be accounted for. A number of indicators will be needed to cover all the objectives. Each service has one or more social conditions to which it is applied. Some of these conditions should be referred to in the statement of service objectives. With refuse collection, the social conditions are garbage, trash, and bulk items in public view.

A service delivery framework, or model, should be used to help identify specific indicators for such service. The framework we propose has several uses. It directs attention to several stages of the service process. It forces the analyst to consider the consequences of the service. It stresses performance, in addition to encompassing workload measures.

For every urban service, resources are required. In systems model terms, resources commonly are referred to as inputs. The service delivery framework and its relationship to systems model terms is diagrammed in Figure 1. Resources are money, personnel, facilities, and equipment. A useful measure of resources often is expenditures. However, expenditures may be difficult to obtain and substitutes sometimes are used for this reason. It will be easier to identify the number of workmen per solid waste collection route than the expenditures that are made to employ them. Although multiple measures of resources will be helpful, expenditure measures have the advantage of encompassing most resource components.

The activities of the urban service system are the ways in which the resources are used. Sanitation workers collect refuse, firemen respond to fire alarms and suppress fires, policemen patrol streets and make

Figure 1. Service Analysis Framework

Each service has objectives

involving

Serving population and influencing social conditions

by using

Resources

(Expenditures, personnel, facilities, equipment)

and engaging in

Activities

(time frequency and duration)

having

Results

(direct consequences--intended and unintended--
and especially use of services--amount, rate,
and reasons)

and leading to

Impacts

(changes in social conditions)

Table 1. Examples of Service Indicators

Data for specific indicators of resources, activities, results, and impacts are obtained by gathering field data about services and facilities and by conducting surveys of citizens.

Resources	Expenditures ($ per 1,000 population or 100 households, $ per phenomenon, such as $ per ton of solid waste collected)
	Personnel (number per 1,000 population, number per phenomenon, such as number per ton of solid waste collected)
Activities	Frequency (refuse pick-ups per week)
	Location (regular collection at curb or side of dwelling)
Results	Intended consequences (pounds of refuse collected per route, street cleanliness rating after refuse collection)
	Unintended consequences (number of missed refuse collections per week per 100 households)

arrests. Activities are sometimes referred to as processes in systems model terms. Activities are more difficult to measure than are resources. They involve motion, change, action. An analyst may be reduced to using time frequency and duration measures, e.g., how frequently was refuse collected.

Results are what happens as a direct consequence of activities of the service delivery system. Results are essential in measuring the extent to which service objectives are being achieved. How clean are streets after refuse has been collected? These measure results of the service. In systems terms, they often are referred to as outputs. Results are not always intended. Objectives usually are not achieved completely. Some refuse may be left on the street after collection. Thus, analysts should try to include indicators of unintended, as well as of intended, consequences.

The impact of a service can be defined as the difference between results given the existence of the service and the conditions that would exist in the absence of the service. When one talks about the contrast between the presence and absence of a service, the impact of the service probably is very great, although it cannot be estimated accurately.

Indicators of Service Distribution

What are some possible discoveries from measuring the distribution of solid waste collection services? Why should administrators make the effort? Perhaps street cleanliness after collections varies dramatically. Systematic description can unearth these variations and lead to changes in refuse collection and street cleaning. Perhaps the bulk refuse collection system is inappropriate to the conditions and problems in certain neighborhoods. Perhaps complaints about noise can be systematically related to the time of day when collections are made. Administrators might change collection times to reduce complaints. Each of these indicators is an indicator of a result of the service. Each result can be changed by changing decision rules.

Most measures presented below would be practical for local governments to collect regularly. Opinion measures are less practical for some governments to collect at all. Practicality is a matter of time and expertise, which makes it fundamentally a matter of cost. In a few instances, the usefulness of the measure will be slight to some governments. The usefulness of the measures will be commented on after they are presented.

The measures always must involve a comparison. For example, tons of garbage collected can be compared by truck with the number of workers who filled it, the number of miles traveled, the number of persons serviced, and so on. Missed collections should be kept track of by route and block. The number of comparisons that can be made for a particular measure may be substantial. A government can adapt the number of comparisons to its needs. Readers should bear in mind that these measures can be modified to serve local needs.

TABLE 2. Solid Waste Collection Measures

Objectives: Promote cleanliness, health, and safety of the community by removing garbage and trash while minimizing inconvenience to citizens.

Indicators by measurement category	Data collection source and procedure
Resources	Sanitation department records
Expenditures per ton collected per route	Expend./tons
Expenditures per route mile	Expend./miles
Expenditures per capita per route	Expend./persons
Activities	Sanitation department records
Frequency of regular collection	Statement if uniform, map if variable
Location of regular collection (curb, side of dwelling)	Statement if uniform, map if variable
Frequency of bulk refuse collection	Statement if uniform, map if variable
Frequency of street cleaning	Statement if uniform, map if variable
Results	Sanitation department records
Street cleanliness (refuse left after collection)	Sanitation department records Visual inspection or photo rating data by block gathered by sanitation department
Pounds of garbage collected per route	Sanitation department records
Missed collections	Sanitation department records. Supervisor survey and resident complaints.
Complaints about service.	Sanitation department and/or complaint department records.
Resident satisfaction with service (This can include specific aspects, such as street appearance, noise, odors, missed collections, damage to containers, health and fire hazards)	Responses to question on garbage and trash collection included in a general survey of resident opinions on local government services.

The measurement process should include performance indicators. One of these measures is tons of garbage collected. But while that is essential to analyzing the performance of work crews, it does not measure anything directly about street cleanliness, safety, and health. Additional indicators are needed.

Discussion of the Indicators

Resources. One measurement of refuse collection is tons (or some other weight) collected. This is an indicator of results. It also is part of a resources measure— expenditures per ton collected, which is the best way to determine how much work each crew is doing. For that purpose, routes are the appropriate units to compare. Additional data are needed to determine how much is spent per capita and per route mile. Expenditure data are useful, because they can be related to income, property value, and racial data to determine the relative amounts spent on solid waste collection for various groups and locations. Expenditure data then can be related to indicators of results. It will be important to determine whether poor performance on result indicators such as poor ratings on street cleanliness, missed collections, noise, and odors, is closely related to low expenditures per dwelling unit. Such a relationship could provide justification for modifying the expenditure pattern, perhaps by providing supplementary services to areas having poor ratings on result indicators.

Assume a hypothetical expenditure pattern, such as the one displayed below in Table 3.

Table 3. Expenditures for Solid Waste Collection: An Illustration

Daily Expenditures per:	Total Jurisdiction	Service Districts 1	2	3	4
Ton	300	350	300	300	250
Route mile	200	250	200	200	150
Capita	3	4	3	3	2

One plausible explanation for the cost differences between service districts 1 and 4 is the following: Less tonnage is collected in service district 1 because dwelling density is relatively low. Therefore, expenditures per ton collected are greater on route 1. Vehicles travel farther between pick-ups. Crews spend more time riding, less making pick-ups. This increases the cost per ton, per route mile, and per capita. Conversely, service district 4 is more densely settled. More tonnage is picked up while travelling shorter distances. Thus the cost is less per ton, per route mile, and per capita.

Activities

Frequency of collection and location of collection, whether at the curb or side (back) of the dwelling, are basic service components. These components may be uniform throughout a jurisdiction. However, in New York City, collection frequency varied in 1977 from five times a week in some neighborhoods to twice a week in others. The variation in frequency is related to density, the amount of refuse to collect, and cleanliness of streets. Need is used explicitly to justify variation in collection frequency. Sometimes location varies also. In Richmond, Va., most households have had curb collection but a substantial number received side-of-the-house pick-up at no extra cost. Side-of-dwelling collection tended to occur in better-off neighborhoods.

Decision rules for the frequency of bulk collection (refrigerators and stoves, furniture and mattresses) vary greatly from city to city. In New York City, bulk refuse is collected routinely every week on the second collection day of the week. In Atlanta, collection is made by the end of each week as special crews make their rounds, but residents are requested to place bulk items at the curb at the beginning of the week. In Richmond, residents call for service and receive it within one week. In Charlottesville, bulk items are collected only twice a year.

Street cleaning frequency is likely to vary within a city. In New York City, frequency varies from six times a week to once every two weeks, in Atlanta from once every two weeks to once every three or four weeks, in Richmond from once a week to once every three months. Frequencies are based on need assessments. In New York City, an independent organization submits monthly evaluations of street cleanliness. In Atlanta, the variations were adopted after a one-time city-wide evaluation. In Richmond, supervisors periodically to a windshield survey of street conditions.

Results

One essential result indicator, as discussed above, is the number of pounds of refuse collected per route and per person. This measures the amount of work performed. But it does not measure how clean the streets are. Refuse left after collection can be measured using a visual inspection, narrative descriptions, and a rating sheet, or a photo-rating system. Street conditions of varying degrees of cleanliness-messiness recorded in photographs can be used to compare with street conditions after regular garbage collection.[2] This can be combined with a photo-rating system before collection to get a better idea how much of the remaining litter may be attributable to the way in which garbage is collected. The remedy for wide variations in street cleanliness may require several different types of initiatives— street cleaning, code enforcement, bulk pick-ups, plastic bags, exhortations for neighborhood cooperation, and the like— to achieve substantial change. The photo-rating system provides the basis for program and operating procedure changes to be discussed against a background of solid information. Of course, a similar approach can be used, with less reliable impressions, by using visual inspection and a narrative rating sheet without photos against which to compare observed conditions.

The importance of missed collections is evident. A regular collection schedule diminishes greatly in value if collections frequently are missed. The definition and identification of missed collections may not be as clear. Usually records of missed collections are based on complaints, even though complaints cannot always be taken at face value. Still, complaints should be recorded and evaluated to see if a pattern exists that calls for futher investigation and treatment. If a substantial proportion of missed collections are concentrated on one, or a few, route(s), a remedy should be easy to find. Improved supervision or more equal workloads on each route may be all that is needed. Most cities strive for same-day pick-up of missed collections. In large cities, faced with growing financial problems, if missed collections increase, this will become a more important indicator.

Another service result is the opinions people have of the service. One way in which residents' opinions are learned by urban administrators is when complaints with services are registered. Complaints indicate that the caller feels strongly that remedial action is needed. But complaints do not necessarily mean that work crews are at fault. People may complain about a missed collection when they were late putting out the garbage. They may complain about street litter even though the cause may have been that a dog knocked over a garbage can.

The representativeness of the complaint process can be ascertained, in part, by comparing it with the pattern of resident satisfaction with garbage collection services. This can be determined by including questions about garbage service in a general questionnaire about local services. These questions should be targeted at specific aspects of the service, as well as at respondents' general opinion about service. A sample questionnaire is in Appendix A to this chapter. In some instances, residents' responses offer the only reasonable ways to obtain data. For example, if odors and noise are obnoxious, residents can best report that. In other instances, residents' views about street appearance and missed collections provide useful supplements to data from photo-rating systems, visual inspections, and complaints.

An occasionally useful indicator, for which data can be obtained using a survey, concerns noise. Noise during collection occurs because of vehicle sounds and work crew activities. Some trucks may make considerably more noise than others. In some neighborhoods, residences are closer to the street than in other neighborhoods. Some crews are more careful than others. Some combination of these conditions may create considerable annoyance. Vehicle noise can be measured with decibel readings. Detection of work crew noise depends upon resident complaints.

Which Indicators Are Most Important?

The activity indicators are most important because they determine the basic distribution of solid waste collection services. These indicators are frequency of regular collection, location of regular collection, frequency of bulk refuse collection, and frequency of street cleaning. These indicators do not require data gathering. They are decision rules.

The only description needed, other than a statement of the rule, is a map showing frequencies and locations, if they vary in different parts of the community.

The next most important indicator is street cleanliness. This is the result indicator which reveals the most about the achievement of service objectives. It has added importance in that it is relevant to establishing, or revising, decision rules. Street cleanliness should be the basis for varying frequency of street cleaning. It also is relevant to establishing the frequency of regular collections.

Finally, expenditures per capita per route is important, because it will reveal the cost of providing service to different neighborhoods. We expect administrators will find it costs more to service upper-income neighborhoods than middle-income neighborhoods, and more to service middle-income neighborhoods than low-income neighborhoods. If so, this would be relevant to judgments about which decision rules to use for other aspects of the service. The cost of regular daily pick-ups should be considered in deciding whether to provide extra regular pick-ups and extra street cleaning in low-income neighborhoods,if street cleanliness ratings are low in those neighborhoods.

APPENDIX A

An example is provided here of a questionnaire to use in seeking opinions of a sample of residents about solid waste collection service.

Questionnaire

1. Would you say that streets and sidewalks in your neighborhood are:

   Almost always clean_____ Usually clean_____

   Sometimes clean and sometimes dirty _____ Usually dirty_____

   Very dirty most of the time _____ No opinion_____

2. What do you think is responsible for most of the litter, to the extent that there is any, that occurs in your neighborhood?

   Carelessness by refuse collectors_____ Carelessness by residents____

   Lack of adequate off-street storage space for refuse between collections_____ Dogs tipping over garbage cans_____

   Vandalism_____ Wind and rain_____ Other_____ Don't know______

3. In the past 12 months, did the collectors ever miss picking up your trash and garbage on the scheduled pick-up days? (If Yes, ask:) How many times did this occur?

   No, never missed_____ Yes, 1 or 2 times_____ Yes, 3 or 4 times_____

   Yes, 5 or 6 times_____ Yes, _____ times Don't know, don't remember_____

4. In the past 12 months, did the collectors ever spill or scatter trash or garbage you set out? (If Yes, ask:) How many times did this occur?

   No, never_____ Yes, 1 or 2 times_____ Yes, 3 or 4 times______

   Yes, 5 or 6 times_____ Yes, _____ times Don't know, don't remember_____

FOOTNOTES

1. Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research, (Chicago: Rand McNally & Co. 1963); Harry P. Hatry, Richard E. Winnie, and Donald M. Fisk, Practical Program Evaluation for State and Local Government Officials, (Washington, D.C.: The Urban Institute, 1973); Carol H. Weiss, Evaluation Research, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972).

2. For a detailed description of how a photo-rating system operates, see Chapter 3 of Blair, Louis H., and A. I. Schwartz, How Clean Is Our City? (Washington, D.C.: The Urban Institute, 1972).

3. Jones, B. D., S. R. Greenberg, C. Kaufman, and J. Drew, "Bureaucratic response to Citizen Initiated Contacts: Environmental Enforcement in Detroit," American Political Science Review, forthcoming; and Verba, Sidney and Norman H. Nie, Participation in America: Political Democracy and Social Equality, (New York: Harper and Row, 1972).

Self-Evaluation Questions

1. What are the main components of, and the relationships within, the service delivery framework suggested for guiding the selection of indicators?

2. Define service resources, activities, and results.

3. What is the definition of service impacts? Why are impact indicators difficult to identify and use?

4. Which indicators of solid waste collection services are most important? Why?

CHAPTER 4. GEOGRAPHIC ANALYSIS

What questions will decision-makers have that geographic analysis of service distribution will answer? They will want to know whether service distribution, however measured, is equal per capita, or equal for other units of analysis. If services are unequal, they will want to know the extent of the variation. Next they will want to know whether variation in service characteristics is directly related to need— need in service-specific terms as measured by refuse weight and residential density and need in general terms as measured by income or housing value. They will be interested in how complaints vary among service districts as a clue to how a demand-based concept of equity would benefit different areas in the jurisdiction. If residents pay a fee for refuse collection, then they may be interested in how fees are related to income characteristics and to service results in the jurisdiction's various service districts.

The analysis of service distribution involves geographic comparisons. Geographic units must be selected for which data are to be gathered. Each geographic unit should have three characteristics. First, service data should be available for it. Second, population data and physical characteristics (such as housing) data should be available in order to match them with service data. Third, the unit should be relevant to decisions that may be made about the service.

These three characteristics often are difficult to obtain. Many services, such as solid waste collection, will have service districts. It will be most common to match service data with population data to obtain an indicator of x amount of service per capita, per household, or per 1,000 people. For example, an analyst may want to determine solid waste collected per 1,000 residents. Occasionally there will be a need for data for the number of households. For example, an analyst may want to determine solid waste collected per 1,000 households. These data are available in Block Statistics published by the U.S. Bureau of the Census. Block Statistics are published for every square block in the urbanized area of all 243 Standard Metropolitan Statistical Areas (SMSAs) that existed in 1970, as well as for other jurisdictions which contracted for this service from the Census Bureau. These data can be summed for all the blocks that make up any unit for which aggregate indicators are sought— service districts, neighborhoods, or parts of neighborhoods.

To assist in evaluating the equity of a particular service distribution pattern, analysts will need other data. For example, they should identify the income and race of residents. Service distribution then can be related to income, and to race, to see if either characteristic seems to be associated with a service district or neighborhood receiving better or worse service than local officials believe it should receive— based on some conception of equity. Data on the number of Negroes are reported for blocks. The reliability of the data is questionable, but it probably is preferable to use block data to construct data for larger units than it is to take census tract data for race and to guess the racial characteristics of the portion, or portions, of a census tract for which one needs data. In most instances, the Negro population will not be distributed evenly throughout a census tract. Income data are not available for blocks. A substitute for income can be used. Average value of owner occupied housing is reported, as are the number of units of each type, in block statistics. From these data, an analyst can construct averages for housing value for service districts or neighborhoods.

A much wider variety of population data and housing data is available for census tracts. Census tracts rarely coincide with service districts. Nor are they likely to coincide with boundaries of neighborhoods, as neighborhoods are perceived by residents. If one proposes to make use of data available only in census tract documents, then it becomes necessary to adjust census tract data to fit with service district boundaries. This requires assumptions, with an undetermined but potentially considerable margin for error, about the population and housing characteristics in the portion of a single tract, or portions of two or more tracts, which coincide with the service district boundaries. The simplest assumption is that the portion of a tract has the same characteristics as the entire tract. This probably is more often false than accurate. How inaccurate it may be cannot be determined. For example, the median family income in a census tract might be $11,500. One might have to assume that the median family income in a portion of the tract was identical, even though visual inspection of housing suggested that income variation in different parts of the census tract might be substantial. Similarly, if a service district overlapped part of two census tracts, having median family income of $10,100 and $11,900 respectively, one would need to use an arbitray rule-of-thumb procedure to arrive at a service district estimate for median family income. If one estimated that the tract with a $10,100 median constituted 60 percent of the service district ($10,100 x 60% = $6,060) and the tract with an $11,900 median constituted 40 percent of the service district ($11,900 x 40% = $4,760), then the sum of the two portions would be $10,820 ($6,060 + $4,760 = $10,820). This procedure has serious flaws. It is not valid to add, or average, medians. There is no way to be confident that a portion of a census tract coheres to a census tract-wide statistic. Still, this procedure is probably the best available. While it may cause considerable distortion in comparing service districts that seem,by this method, to be similar in median family income, it will cause fewer problems in dealing with service districts that are more distinct from each other.

One requirement of the procedure is that an estimate be made of the proportion of the census tract population that is included within the service district. This can be done using block data. By comparing a map of census blocks with a service district map, the sum of the population living within the service area can be computed. These data, of course, become outmoded, in some areas, between the censuses, which are conducted at 10 year intervals, The planning department serving the jurisdiction may have up-to-date population estimates based on building permits, demolition permits, electricity connections, and the like.

The third need for data to conduct geographic service analysis is to use units of analysis that are relevant for decision-making. The service district is a unit of analysis that often can produce information useful for decision-making by urban administrators. Per capita solid waste collection costs may be much lower then the norm in one service district, and refuse left on the street after collection may be greater in that district. If so, administrators could use this information to shift the expenditure pattern, modify decision rules used in collecting garbage, and/or add supplementary programs.

Information about units of analysis other than service districts also is useful to administrators. Sometimes the block, defined as both sides of a street, may be the most relevant unit of analysis. Solid waste collection may be less satisfactory on a block that is particularly densely settled, or on several such blocks, in a service district which at the aggregate level seems to compare adequately with other service districts. This might be caused by lack of storage areas, by landlords that do not supply sufficient garbage cans, or by other conditions which may be associated with residents having low incomes. For the results of refuse collection to reach a satisfactory level in such an area, or other areas, it may be necessary to modify a number of practices which work well in most areas. This possibility would not be identified by using service district data.

CHAPTER 5. MANAGEMENT STRATEGIES

Solid waste collection is one of the easiest local public services to analyze. The analysis has three basic steps. The first step is to analyze distribution of activities. The second is to analyze distribution of results. The third is to analyze distribution of resources.

The most important determinant of solid waste collection distribution is the decision rule for frequency of collection. From this rule it is self-evident whether the activity of collecting solid waste is distributed equally or unequally to neighborhoods.

A judgment about the appropriateness of the distribution of collection activities should be based, first, on variation in results, and second, on variation in resource distribution. Results should be examined before resources, because they are more directly related to achievement of service objectives. Though results usually are more difficult to analyze than resources, for solid waste collection the analysis problems are similar for both results and resources and in neither instance are they difficult.

The best indicator of results is street (and sidewalk or alley) cleanliness. This statement assumes that collection services are sufficiently adequate that few diseases can be attributed to uncollected refuse. Street cleanliness can be evaluated by visual surveys. Surveys should be executed with the aid of photographs of different street conditions against which to compare street conditions at a particular time.

Some variation in street cleanliness is inevitable. Local officials should decide whether the variation is excessive. Next they should decide whether services should be changed to reduce the variation in street cleanliness. Finally they should decide the appropriate service response. There are three potential responses with regard to the frequency of service. The frequency of regular collections could be changed, or there could be changes in the frequency of bulk collection or street cleaning. Changes in street cleaning frequency are much the simplest changes to implement. A change in street cleaning can be changed again with ease, if subsequent analyses of street cleanliness suggest other patterns of service distribution would be appropriate. Bulk refuse problems, of course, need a separate response. If collections are made a few established times during the year, perhaps some provision could be made for service in response to requests. Changes in frequency of regular collections will be most difficult to make. They will be the most visible and controversial. If increases in regular collection services are provided, they also will be more costly than would increases in other aspects of the service. Therefore, changes in street cleaning and/or bulk refuse collection should be considered first.

Although the data gathering process will be most efficient if data are gathered to serve several purposes, in some instances administrators may gather data solely to analyze service distribution equity. What should trigger this decision? When should administrators decide to gather and analyze data for the purpose of evaluating service equity?

The most important situations in which administrators should gather and analyze data to evaluate the equity of service distribution are:

1. When they believe that an important aspect of a service may be distributed in ways which they consider inequitable, but they are not sufficiently confident of their position.

2. When they believe there is a reasonable chance that a change can be brought about, if their beliefs about service inequities prove to be accurate.

3. When a substantial number of complaints have been made about allegedly inequitable service delivery.

4. When they believe one or more neighborhoods may be the victims of many inequities in service distribution.

When any of these four conditions exist, administrators should consider having data about the relevant aspects of service distribution gathered and analyzed. Data analysis decisions should be based on the following considerations:

1. Which data items are most directly focused on resolving the beliefs of administrators about possible service inequities.

2. Which data items can be gathered at least cost.

3. Which data items will aid the most in meeting related policy-making needs, such as needs for capital programming, evaluation of service effectiveness, and management by objectives.

The first consideration usually will be met best by including at least one indicator each of resources, activities, and results to provide information about these three aspects of the service system. The second consideration tends toward selecting few indicators. But the third consideration tends toward selecting a larger number of indicators to achieve a larger number of policy-making objectives. The development of an information system that is adequate to evaluate service distribution equity can best be achieved if equity analysis is integrated with other types of policy-making analysis.

Which Equity Concepts Should Be Relied Upon for Solid Waste Collection?

What is the basis for our suggestions for which equity concepts to use? First, they are based on the general objectives of solid waste collection services. These objectives are to promote the cleanliness, health, and safety of the community by removing garbage and trash while minimizing inconvenience to citizens. Second, these suggestions are based on common practices in cities. Third, one of our values is that equity concepts should be applied so as to minimize spillover effects– consequences from the behavior of individuals that harm their neighbors.

For solid waste collection services, one meaning of demand is the basic equity concept to rely upon, but equality and need also have some scope. People conduct their daily activities, expecting that refuse will be collected on a regular basis– when they demand it within the rules. Putting out refuse constitutes a demand for the service.

Neighborhoods should be equal in one sense of equality. At least an acceptable minimum level of service, or greater, should be provided in every neighborhood. Need also should play a role where there are spillover effects. With solid waste collection, the debris in front of one house affects the quality of life for neighbors. Greater attention may be warranted in these instances to those with greater need for service, even though they may not demand it. Densely populated neighborhoods often will need more service, if the cleanliness, health, and safety of those neighborhoods is to be achieved to an extent similar to the conditions achieved in other neighborhoods.

Decision-Making Sequence

When an administrator wants to involve himself in distributional issues, he must do so in a sequence of actions. While sequences will vary some from situation to situation, the steps described below are a reasonable sequence to follow.

1. Determine the decision rules that are used to distribute the service.

    a. Write or obtain detailed statements describing the decision rules that are used.
    Example: Regular refuse collection will be at the curb, except that back of the house pick-ups are provided for a fee.

    b. If a particular aspect of service distribution, such as street cleaning frequency, is influenced by more than one decision rule, then write or obtain a statement in which the rules that influence the decision are ranked in the order of their importance.
    Example: The first decision rule is to clean all streets at least once a month. The second decision rule is to clean some streets more often, based on a once a month evaluation of street cleanliness.

c. Obtain supplementary statements, if necessary, explaining why and under what circumstances, other factors may influence decisions or circumstances when the rank order of decision rules may be different.
Example: In November, additional street cleaning is conducted in low density, normally clean areas to remove leaf remnants after special leaf pick-ups.

2. Evaluate the implications of using these decision rules.

   a. What conception(s) of equity do the decision rules reflect?
   Example: The decision rule to provide bulk refuse collection twice a year, once in the Spring and once in the Fall, reflects an equality of activities concept of equity.

   b. Estimate who tends to benefit from the use of these decision rules based on:
   – General tendencies that the use of this conception of equity has.
   Example: Having only two bulk refuse collections per year will tend to result in more refuse build-up in public view in densely populated, low income neighborhoods than in other neighborhoods.
   – Specific tendencies which seem to apply to the distribution of a particular service in this specific community.
   Example: To identify the specific pattern of refuse build-up, a field inspection should be conducted.

3. Decide whether you disagree with, or doubt the appropriateness of, the decision rules that are used, by considering:

   a. Which conception, or conceptions, of equity you believe should generally be applied to this service.

   b. Whether the decision rules are consistent with this conception of equity.

   c. Whether you believe the consequences of using the decision rules are desirable.

4. If you question the appropriateness of the decision rules, discuss your concerns with other officials. Discuss:

   a. Whether your concerns are justified.

   b. What additional steps to take, such as adopting new decision rules, identifying decision rules used in other communities, and gathering and analyzing data about service distribution in your community.

5. If you are convinced that changes should be made, adopt revised decision rules, after:
   - a. Deciding which conception, or conceptions of equity should be applied.
   - b. Deciding what general distribution of benefits is appropriate.
   - c. Deciding what decision rules would best achieve the distribution sought.
   - d. Reviewing the implications of the proposed decision rules for total cost, unit cost, service effectiveness, administrative practicality, and political ramifications.

An additional optional step would be to consider the decision rules that are used in other communities.

A Final Word

Why bother with evaluating the equity of urban service distribution?

The distribution of services is the principal determinant of who receives the benefits of local government activities. That is ample reason to analyze and evaluate service distribution.

Generalist administrators have additional reasons to be concerned. City managers, mayors, budgeters, and planners often have only a modest role in influencing important aspects of service distribution. Generalists should have a larger role. They need to know what operating departments are doing, why they are doing it, and what the consequences of departmental decisions are.

Obtaining more information is one method of increasing influence and control. Other steps are helpful. Equity concepts should be understood. The purpose of the methodological framework for selecting indicators needs to be grasped.

Decision rules constitute the heart of the process of influence and control. Service distribution consequences are determined by decision rules. Administrators who want to evaluate service equity and who want to increase their influence over service distribution consequences should focus their attention on decision rules.

Self-Evaluation Questions

1. What are the most important determinants of the distribution of solid waste collection services?

2. How would you determine when to gather data about service distribution?

3. Which equity concepts should be relied upon in distributing solid waste collection services?

4. What are three examples of decision rules for solid waste collection? What consequences would they have for residents?

5. What are the main elements of a framework for analyzing service distribution?

6. What are the most useful indicators of the distribution of solid waste collection services?

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HANDBOOK FOR ANALYZING THE DISTRIBUTION OF LIBRARY SERVICES

Module 3

Developed by

DIVISION OF URBAN AND ENVIRONMENTAL PLANNING,
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UNIVERSITY OF VIRGINIA

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CHAPTER 1. THE PARADOX OF URBAN SERVICE DISTRIBUTION: THE ROUTINE AND THE MYSTERIOUS

The provision of most local public services involves a paradox. Most services are routine. Nearly everyone is familiar with them— police, fire, refuse collection, water, parks, recreation, libraries, sewage disposal, bus service. Yet little is known— by citizens, by elected officials, even by administrators and planners— about who gets how much of them. Deciding who gets what is the essence of politics. The provision of services to people is the essence of administration. But administrators rarely systematically analyze who gets how much of the services they distribute. Instead, they use decision rules that seem reasonable to routinize service distribution. These rules emerge from professional standards, from history and custom, from the pursuit of efficiency, from aspirations for effectiveness. What are consequences of these decision rules? What are the alternatives administrators should consider in deciding whether a service distribution pattern is equitable? What are the main conceptions of equity? How are decision rules related to service distribution patterns? How should service distribution be measured and analyzed?

These are some of the questions that are examined in this handbook about the distribution of library services. In our discussion of these questions, we will attempt to make equity a concept that library administrators and other local officials can use in practicing their craft, just as they use the concepts of efficiency and effectiveness.

Conceptions of Equity

Every service distribution pattern reflects a conception of equity. The conception of equity may be unarticulated. Nevertheless, it will be manifested in decision rules, in routine procedures for distributing services. In interviewing local government officials, we have found that two conceptions of equity were most frequently mentioned. The first is that every one should receive equal services. The second is that local officials should respond to demands. When the questioning probed behind these general responses, a number of interesting complications became apparent. In many instances, equal service distribution per capita is a vague goal, often inappropriate, frequently modified by circumstances, rather than an operating procedure. In some instances, services explicitly are distributed unequally per capita, even when administrator's top-of-the-head response is that equal per capita service distribution is the department's operating norm. In some instances, equal service distribution is proclaimed, though in fact administrators do not know whether services are equally distributed.

Need is a third conception of equity that commonly is used for certain services. The argument is that as needs vary, services also should vary. For example, library resources could be distributed according to some criterion of need (low income, for example).

Preference represents a fourth conception of equity. This notion of equity assumes that consumer preferences should determine the quantity and quality of services that local governments provide. Preferences differ from demands in that they include unarticulated demands as well as those that are expressed. Unarticulated demands must be elicited. The information costs therefore are high. This makes preference less practical and less used, as a conception of equity than equality, need, and demand.

The fifth conception of equity is that willingness-to-pay should determine service distribution. Choice is regarded as the best guide to preference and choices are thought to be most meaningful when services are paid for directly. User charges and special assessment financing implement the willingness-to-pay concept of equity. Since willingness-to-pay is related to ability to pay, the implication for service distribution is that relatively well-off persons are likely to obtain more of the service provided in this way.

Conceptions of equity are implemented, explicitly or implicitly, through decision rules. Decision rules are rules-of-thumb, routine procedures, and customary practices that determine how most operating and capital expenditures are made. Decision rules have consequences for the distribution patterns for each service. In many cities, library resources are distributed among branch libraries on the basis of circulation rates (demand as equity). Since high use libraries tend to be located in middle and upper-income neighborhoods, the effect of this decision rule is to allocate more resources to wealthier areas.

Service Effectiveness

Administrators should evaluate services in terms of their achievement of service objectives. Varying degrees of achievement of service objectives suggest whether services are more, or less, effective. Judgments about service effectiveness should be made cautiously, because conditions often are influenced by events other than those involving the service itself. But one aspect of assessing service effectiveness is clear. It is not adequate to determine community-wide numbers of library books per 1,000 persons. It is not acceptable to have two library books per 1,000 persons in some neighborhood branches and 20 library books per 1,000 persons in some other neighborhood branches.

Geographic distribution is an integral part of service effectiveness. Administrators should analyze service distribution as a basis for estimating effectiveness and in order to provide a basis for making judgments about service equity.

The essence of the methodology proposed is that multiple indicators of library service distribution should be used. A framework should be used that encourages attention to the entire service delivery process. The framework proposed here uses four categories to analyze service distribution. These categories are resources, activities, results, and impacts. The first three categories have the greatest usefulness. Impact indicators are more interesting to social scientists than to government officials, because analysis of impacts requires more time, money, and controlled conditions than administrators are able to command. Often the analysis of service distribution has relied upon resource indicators— expenditures and personnel in particular. The argument is made here that indicators of service activities and results also should be stressed. In fact, service analysis that depends upon resource indicators may be seriously misleading.

Purpose of Handbook

The purpose of this handbook is to show administrators and students how the concepts of equity and service distribution can be useful in local library planning and management. Efficiency and effectiveness are traditional goals of public administration. Methods have been developed to make these goals operationally useful. Equity is espoused, but its meaning is obscure. The undoubted importance of equity makes its meaning worth searching for. Equity will be a more useful concept, if its several meanings are recognized and if administrators, and others, try to select carefully the particular conception of equity most appropriate to their service, circumstance, and values. The key to operationalizing equity is to develop methods to analyze service distribution and to identify the decision rules whose use leads to a particular pattern of service distribution. Concepts of equity, decision rules, and service distribution patterns then can be related to each other. Through this interaction, local officials can decide whether to change any, or each, aspect of the service distribution network.

FOOTNOTES

1. References in this chapter to decision rules and processes used in various communities are based on interviews with local government officials conducted by the authors.

2. The book and handbooks that accompany this publication, by the same authors, deal with police, solid waste collection, and parks, and the general subject of Equity and Urban Service Distribution. They examine decision rules and service distribution information systems in detail for these services. Legal issues are examined in Chapter 5 of the book by the authors entitled Equity and Urban Service Distribution, published by the National Training and Development Service.

CHAPTER 2. EQUITY AND THE DISTRIBUTION OF LIBRARY SERVICES

Several goals are sought by public officials when they consider how government services should be allocated. Three of these goals are efficiency, effectiveness, and equity. Each of these goals is abstract, subject to differing interpretations, difficult to define. However, we can define them sufficiently to distinguish them from each other. Efficiency concerns achieving results at least cost. Of two methods, the one achieving the result sought at the least cost is the most efficient. The goal of effectiveness focuses on results. The most effective program is the one that achieves the most of the results sought. Cost considerations are secondary. In practice, therefore, administrators try to balance considerations of efficiency and effectiveness.

Equity concerns who gets what. It involves fairness and justice. Is the distribution of benefits in society fair? Do the recipients of government services get the type of services they should receive in the amounts and the quality that are appropriate? Are public officials responsive to all citizens in all parts of the jurisdiction? Do some citizens get responded to in ways that differ from the responses others receive? Are services similarly effective in all parts of the jurisdiction? If not, is there a reasonable justification for differences in service effectiveness?

We are concerned with how the concept of equity can be used by local public officials in their deliberations about library service distribution. The analysis of who gets what can be conducted most usefully by local government officials in geographic terms. What is the geographic distribution of library services and is that distribution appropriate?

In this chapter, we examine five conceptions of equity— equity as equality, equity based on need, equity based on demand, equity based on preference, and equity based on willingness-to-pay. Our main concern is to clarify the implications of basing local service distribution decisions on one, or another, of these equity concepts. What are the likely consequences of basing decisions about where to locate public libraries, and how to allocate funds to purchase new library books on one, or another, of these five conceptions of equity?

Equity as Equality

One important equity concept is that services should be distributed equally. Equal distribution has several meanings. These meanings have three dimensions. One dimension involves units of analysis. The second involves the range of permissible variation. The third dimension involves indicators of services.

The unit of analysis appropriate for library services is the neighborhood or service district. Some services are not supplied to households. Instead, they are made available to neighborhoods or service districts. A library is intended, primarily, to serve residents for some distance on all sides. Neighborhoods can be compared with each other in terms of the adequacy of services. Households within each neighborhood, however, will be varying distances from each library. The meaning of equal service distribution for libraries is that each neighborhood has the same number of square feet of space for every 1,000 residents. Not every household receives equal library services. Instead, equality of library services refers to comparisons among neighborhoods.

Equal service distribution may refer to precise equality or to differences within a range of permissible variation. It is unlikely, for example, that each neighborhood branch will have exactly the same number of books for each 1,000 residents. Instead, an equal distribution of library books and other materials may mean that the differences among neighborhoods are limited— are within some permissible range of variation. An extension of this notion is that each neighborhood should be served at least at some minimum acceptable standard. For example, perhaps local public officials have set a goal of serving each neighborhood with at least x number of books for each 1,000 residents. These officials may think of neighborhoods as having equal library services once this standard is reached, even though some neighborhoods may have far more than the amount called for by the minimum standard. Under this notion of equal service distribution what is meant is that a minimum standard is reached or exceeded, not that services really are equal.

Equal service distribution is meaningful only in the context of indicators for measuring services. Library services cannot be compared for equality in the abstract. Indicators must be selected. Chapter 4 is devoted to the presentation of a framework for analyzing library service distribution. In that chapter, three categories of indicators are relied upon— indicators of resources, activities, and results. One might analyze library service distribution in terms of a) the number of books per 1,000 neighborhood residents (a resource indicator); b) the number of hours each neighborhood branch is open on a weekly basis (an activity indicator); or c) the number of books circulated per each 1,000 residents (result indicator).

Equal service distribution for libraries could mean:

a. Equal number of books per 1,000 residents;

b. Equal number of hours branches are open each week;

c. Equal circulation rates.

It is not important at this point for the reader to understand fully the distinction between indicators of resources, activities, and results. Our purpose here is to emphasize that the notion of equal service distribution is meaningful only in the context of specific indicators of service distribution. Because indicators measure different important aspects of service distribution, it is essential to use a multiple indicators approach to service distribution analysis.

Inconsistency Between Equality and Other Equity Concepts

The concept that equity requires equality is not easily reconciled with the concepts that equity should be based on need, demand, preference, or willingness-to-pay. To discuss these inconsistencies, each of these alternative equity concepts must be defined and briefly explained.

Need

Equity based on need assumes that some people have a greater need for public services than do other people and that these greater needs should influence the distribution of public services. How differing needs are identified is one complication with this equity concept. Another difficulty concerns how large differences in need should be before different levels of service are provided to deal with those needs. Some of the complications associated with need will be considered later at greater length.

At this point, it is sufficient to note that if needs vary and if services vary to some degree in relation to needs, then by definition services cannot be distributed equally. Thus, the notion that equity requires equality is inconsistent with the concept of equity based on need.

This statement of the inconsistency between equity as equality and need is too abrupt, however. There is potential for recognition of both the equality and need concepts of equity. One way to achieve this is through the permissible range of variation aspect of service equality discussed above. If number of books per capita must vary, then this variation can favor persons with greater needs. The notion of distributing services in order to achieve a level of minimum standards also permits variation in response to need. All neighborhoods can be provided with a minimum standard of library services. However, some neighborhoods can be provided with services beyond this minimum standard. Those neighborhoods receiving more can be places where residents have greater needs. The apparent logical incompatibility between the equality and need concepts, therefore, is eroded by the range of permissible variation and the minimum standards aspects of service equality.

Demand

Equity based on demand means that public service distribution should be influenced by the explicit demands that people make for services. Demands can be expressed in several ways. Use of libraries registers demand. Requests for services (a new library) express demands. Complaints about services (inconsiderate employees, inconvenient hours of operation) manifest demands. Voting, interest group activity, and public protests all communicate demands. Just as some people say they want more of a service, others say they want less, and some want the same amount but at a different level of quality. The distributional consequences of responding to demands will be discussed later.

At this point it is important to observe that equality as equity is not consistent with demand-based equity, unless demands are equally distributed. Again, variation can be accommodated through the range of permissible variation and through the minimum standards aspect of service distribution. For example, all neighborhoods could be provided with library services that meet a minimum standard. Services in excess of this minimum standard could be provided on the basis of demand.

The difficulty of reconciling equity based on demand with equity based on need also is apparent. The demand and need concepts of equity are consistent, if those with greater needs express them as demands. Whether demands reflect needs accurately is an empirical question.

Preference

Another equity concept is that services should be based on preferences. Preferences include expressed and unexpressed wishes. An unexpressed wish still can be a preference. People may feel like requesting or complaining without doing so. They may want to use library services but are deterred by lack of accessibility. They may want to use a library but fear for their safety. It seems probable a) that not all people in one neighborhood want the same package and level of services, and b) that not all neighborhoods want the same package or level of services. Thus, equality and preference as equity are difficult to reconcile. Unless all preferences are expressed as demands, then the preference and demand concepts of equity also are inconsistent. Preferences also may not match needs. For example, need for library services could be measured by the income characteristics of neighborhood residents. One could infer that poor people have limited access to private cultural and educational opportunities. Therefore, one could assume that residents of poor neighborhoods have a greater need for neighborhood libraries than do the residents of richer neighborhoods. There is no guarantee, however, that needs measured in this or in any other way will be manifested in matching preferences.

Willingness-To-Pay

Willingness-to-pay measures both the presence and intensity of demand. It requires that preferences be expressed and that the expression of preferences be weighed in the crucible of how much services cost. Intensity is taken into account because expenditures made once cannot be made for other goods or services. Thus, some argue that preferences and demands are most realistically represented when they are expressed through willingness-to-pay for specific services. Equity, in this view, should be based on the willingness of consumers of services to pay for them.

Willingness-to-pay, however, is related to ability-to-pay. Since ability-to-pay is not equally distributed, willingness-to-pay is not likely to be equally distributed either. Therefore, this equity concept is inconsistent with equity as equality. Ability-to-pay may also be diametrically opposed to equity based on need. Willingness-to-pay is a variation on demand and preference. Thus, there should be similarities between them.

However, many people with unexpressed preferences may not be willing to pay for them. Also, many people who complain about, make requests for, and use services might not do so if price tags were attached to these activities.

The Purpose of Noting Inconsistencies Between Equity Concepts

Judgments about equity require judgments about values. Choices must be made. Among these choices are the conceptions of equity that seem most appropriate. One could approach the subject by choosing one conception of equity and trying to fit it to every circumstance. We believe that the role of local public officials is too complex to make such a simple, all-purpose choice work effectively as a guide to decision-making about libraries. Rather, we think that public officials will do better by balancing these conceptions of equity, by picking one or two to fit most circumstances, but modifying them with other conceptions of equity under certain conditions. We have attempted to distinguish the conceptions of equity from each other. We will now consider some of the characteristics of, and problems with, the conceptions of equity based on need, demand, preference, and willingness-to-pay.

Equity Based on Need

The concept of need, as used here, refers to characteristics of people or conditions in society. Low income is such a characteristic. We think of low-income persons as having a greater need for most public services than better-off people because they have less potential for obtaining those services with private resources. In theory, it would be possible for all services that now are publicly provided to be privately provided in the future. Once this change is contemplated, it is easy to see that low-income persons would be deprived of more services that they previously enjoyed than would middle and upper income persons.

It should be noted that need differs from preference. Preference is subjective. It is a matter of what individuals prefer. Need is objective. This does not mean, of course, that need is easily identified or that needs once identified can be compared readily. For example, it is difficult to compare the needs of one person or neighborhood with the needs of other persons or neighborhoods. But the concept does lend itself to outside judgment. A public official can decide that a certain variable, such as income, is a useful indicator of need and then use that variable as a partial guide to the distribution of a public service. However, even a general indicator of need (income, for example) should not be considered a good guide to the distribution of all services. One should also consider whether there are causal relationships between the condition of having low income and the nature of the public service. Will the goals of the service be better achieved by giving more of the service to some persons than to others?

Need as Equity: Dimensions of Service Delivery

One problem associated with need as equity revolves around an adequate conceptualization of the various dimensions of the service delivery and distribution process— resources, activities, and results. Although these issues are relevant considerations for each of the different conceptions of equity, they are particularly important when dealing with equality and need.

If the public official relies upon the input of resources as the basis for responding to need for library services, he will distribute more (expenditures, manpower, books, equipment, facilities) to high need areas. However, a greater input of resources may have little effect upon results (circulation rates). The basis selected by the public official to respond to need (resources, activities, results) will determine the effort required to achieve success.

Responding to need on the basis of an increased input of resources is an easier task to accomplish than responding on the basis of results. For example, the public official may allocate a somewhat higher level of expenditures for library services to poverty neighborhoods. However, low-income neighborhoods may still have a greater need for library services if results are employed as the basis for evaluation. Circulation rates in poor neighborhoods may still be lower than they are in wealthier ones.

Need on the basis of results is considerably more difficult to respond to because service results are heavily influenced by factors and conditions largely beyond the control of public officials (income, social status, individual values of the consumer). The socio-economic characteristics of neighborhoods largely account for the social conditions that give rise to the variation in need for public services. At the same time, these characteristics exert a significant impact upon the extent to which a particular service will be effective in addressing a given social condition.

Demand as Equity

Demand for urban public services represents another standard of equity. Demand as equity can be approached and measured in two ways. For example, individual citizens or neighborhood groups or civic associations might "demand" that the city build a library in this neighborhood. These demands could be transmitted by phone, letters, or petitions to department heads and the city manager or by visits to city council meetings. Demand for public services can also be measured in terms of user rates. The differences in circulation rates at branch libraries is an indicator of the variation in the demand for library services.

Demand as equity incorporates responsiveness to patterns of consumer activity. More books for branch libraries with high circulation rates appears to be an example of rational resource allocation. Demand also places the burden of expressing service preferences upon the consumer. The public official is not required to determine whether individual citizens, neighborhoods and groups want more library services. Although responsiveness to consumption levels does require that information be gathered on user rates for particular services, this procedure is relatively simple. Once a certain level of public services is made available, resources can be allocated and reallocated on the basis of user levels.

A second characteristic of demand as equity is that all demands can be treated equally. Decisions about which groups and neighborhoods have the greatest need for particular services are not necessary. The administrator can uniformly respond to a variety of demands and ignore complex factors such as the variation in need and preference.

A third aspect of demand as equity is that it tends to maximize efficiency in resource allocation. From the standpoint of both the administrator and the citizen, it may make little sense to stock books in branch libraries that aren't used. Demand as equity further contributes to efficiency in service distribution by minimizing administrative feedback costs. Municipal departments can rely upon citizen complaints for information about service performance inadequacies. User complaints about the availability of certain books at branch libraries provide the administrator with an economical method for assessing the adequacy of neighborhood branch collections.

Problems with Basing Equity on Demand

Demand as equity has several shortcomings. Use of urban public services may be, and probably is, differentially distributed across neighborhoods and groups. If resources are allocated on the basis of consumption levels (circulation rates at libraries) and poor neighborhoods use library services less, the subsequent pattern of service distribution will be skewed in the direction of wealthier areas.

The argument that failure to use a particular public service represents an expression of citizen preference for that service on the part of groups and neighborhoods cannot be accepted at face value. The spatial distribution of public service facilities may have an impact upon the extent to which they are used. If less mobile, low income citizens have to travel too great a distance to take advantage of library services, they may decide not to use the service at all. A distributional policy that emphasizes consumer demand as a guide to resource allocation will further deprive those groups and neighborhoods initially disadvantaged by previous decisions about where public service facilities should be located.

Failure to use a particular service may also be related to the fact that the service is not responsive to citizen preferences. Branch libraries located in poor neighborhoods may have low circulation rates. However, the types of materials, facilities, and programs made available in low-circulation libraries may not be responsive to the preferences of local residents. A distributional policy that emphasized responsiveness to the variation in citizen preference, as well as responsiveness to user levels, might well be reflected in subsequent circulation rates. As a result, the pattern of resource allocation on the basis of consumption levels could undergo a substantial shift. In a related vein, failure to use a service may be a function of the substandard quality of the service provided. Citizens may not use a neighborhood library if it is poorly maintained and lighted, if it is understaffed, if it is unsafe, and if available reading materials are limited.

Another shortcoming of demand as equity is that some groups and individuals are more likely than others to contact government officials about service related problems. The evidence suggests that blacks are less likely than whites to communicate a service grievance to public officials. If blacks are less likely to organize and join a neighborhood civic association and present their petition for a new library directly to the department head, city manager, council, or mayor, the additional library may be constructed in a neighborhood with a well-organized and vocal network of community associations. If some citizens are less willing to request that a branch library purchase and stock certain books and materials, the library may not make these reading materials available.

Equity Based on Preference

At the distributional stage, consumer preferences should be considered for some services. For example, there seems little reason not to consult neighborhood residents about reading tastes. Failure to do so may result in a library building that stands unused at worst, or that contains materials that are read and used reluctantly at best. If a decision has previously been made to provide neighborhood public library services, facilities that remain unused or under-utilized because of lack of responsiveness to citizen preferences represents an inefficient use of scarce resources. From the standpoint of fairness, there can be little justification for insisting that the bookstock in libraries located in ghetto neighborhoods reflect traditional middle-class reading tastes.

Equity based on preference has several problems. First, the unit of analysis problem is relevant. If government attempts to respond to the variation in consumer preferences for public services, it must settle upon some geographical unit (block, tract, planning district, neighborhood). If the unit chosen is too large, racial and socioeconomic heterogeneity would present enormous difficulties. A second problem is that individuals' service tastes may vary widely. A housewife may prefer that the local neighborhood branch library stock light fiction, the student might prefer job training, reference, and technical materials, while the working mother might prefer that the library provide day-care services and facilities. A third problem is that consumer preferences for particular services may be erratic and subject to change. The government's ability to respond to fluctuations in preference is limited. A decision to invest millions in the acquisition, construction, equipping, and staffing of a public library cannot easily be altered to accommodate a change in preference. Many citizens may be unsure about the value they place upon a particular public service. Since the consumer is not required to express his preference through the expenditure of private wealth, an expression of preference may never be required. Shifting preferences may also occur as a result of population shifts.

Equity Based on Willingness-to-Pay

A final standard of equity in service distribution will be briefly considered. Willingness-to-pay incorporates elements of demand and preference. Individuals decide what and how much they want to buy. Intensity of preference is measured by cost.

It can be argued that the most appropriate way in which to distribute a variety of urban public services is to duplicate the operation of the private sector as closely as possible. Some services in some communities are delivered on the basis of willingness-to-pay (water, gas, electricity, refuse collection, sewerage, some recreational services). It can be maintained that all services should be delivered on a fee basis. By tying service delivery to willingness-to-pay, some of the problems associated with preference, need, and demand are avoided.

Under this system, responsiveness in resource utilization would be enhanced since no citizen would receive a service he did not want. At the same time, responsiveness to preferences would be maximized. The service preferences of some would not be imposed upon others. The citizen could buy as much or as little of a particular service as he chose. He would not be required to pay for what other citizens consumed. Willingness-to-pay as equity assumes that the individual citizen knows his own interests and needs. He bears little responsibility for the service needs of others.

However, willingness-to-pay as a guide to service distribution incorporates a number of systematic biases. One of the distinguishing characteristics of public sector service provision is its potential for ameliorating the extreme inequities produced by the operation of the private sector. Each of the conceptions of equity previously discussed (equality, preference, need, demand) assumes that a redistribution of resources is appropriate. Although this often implicit notion of redistribution is more apparent for some perspectives (equality and need) than for others (preference and demand), each standard of equity entails a set of outcomes that differ from those of the private sector. In principle, individuals with higher incomes do not receive preferential treatment in service distribution.

Basing equity on willingness-to-pay would limit public control over resource distribution. Some disparities of the private sector would occur in the public sector. Income levels would influence who got what. Extraordinary service needs would receive little attention. The service preferences and priorities of citizens with limited incomes would be ignored. Equal treatment of different groups would not be a relevant consideration in distributional policy. Those individuals and groups deprived by the operation of the private sector would be disadvantaged by the public sector as well. The opportunities inherent in public sector allocations for counteracting and mitigating the inequalities produced by the private sector would be circumscribed.

Using Equity Concepts in Making Decisions

A discussion of equity is a complex undertaking. Uncertainty about how this complexity can be put to practical use may occur. Though this uncertainty is to be expected, it also may be exaggerated. After all, equity concepts inevitably are used at least implicitly by public officials whenever decisions are made to leave the distribution of services as it is or to change it. Deliberations may not be framed in equity terms, but consequences for equity are unavoidable because distribution concerns who gets what and whether the pattern that results is fair. Our purpose is to help participants in deliberations about service distribution make more self-consciously aware decisions. In making those decisions, there should be three key questions from an equity perspective. These questions are:

1. Which equity concepts are most relevant to library services and to which aspects of the service should they be applied?

2. What decision rules are most important in determining the current distribution of library services and how, if at all, should these decision rules be changed?

3. What is the current distribution of library services and how can this service distribution best be measured?

The purpose of this Handbook is to provide a foundation for clearer thinking about these questions. Separate chapters are devoted to each of these questions. There is no way to provide a formula for such complex, value-laden subjects that public officials can apply to whatever local situations arise. Suggestions can be provided, however, for organizing the analytical process and for applying it to library services. In the remainder of this chapter, we will suggest how to determine which equity concept is most applicable.

Applying Equity Concepts

At the analytical stage, three steps should be taken:

1. What advantages does each equity concept have if applied to library services?

2. What disadvantages does each equity concept have if applied to library services?

3. For each aspect of library services, which equity concept seems most appropriate?

The main questions to ask in determining advantages and disadvantages include the following:

First, who will benefit if the concept is used?

Second, will there be spillover effects if the concept is applied?

Third, is it administratively practical (cost effective and politically reasonable) to apply the concept?

Conclusion

The objective of this chapter has been to clarify alternative conceptions of equity and to sensitize readers to the distributional implications of equity alternatives. There is no formula for making equity judgments. But neither is there any formula for making judgments about efficiency and effectiveness.

Every service distribution pattern reflects one or more conceptions of equity. Therefore, every decision that affects service distribution has equity implications. No decision, or a decision to leave things as they are, amounts to acceptance of the current pattern of who gets what.

Although equity judgments are inherently political in that they concern basic values about the distribution of benefits in society, the evidence indicates that administrators have much greater influence on service distribution than do elected officials. Furthermore, departmental administrators seem to have more influence than generalist administrators such as city managers, budget directors, and planning directors.

In our opinion, the process of making judgments about service distribution should be open to more participants both inside and outside of government. Each participant should be more sensitive to the equity implications of distributional decisions than has customarily been the case.

Questions for Self-Evaluation

1. What are five conceptions of equity? Explain what they are and how they differ from each other?

2. What does equality as equity mean? How can equality be operationalized?

3. In what sense is need an objective condition? What effect will basing equity on need have on who benefits from services?

4. What are the differences between demand, preference, and willingness-to-pay?

5. Describe a sequence of thinking and analysis about equity that can help public officials apply the concept to library service distribution.

6. Take library services and apply to it the questions about who will benefit from using each equity concept, will there be spillover effects, and is it administratively practical?

CHAPTER 3. DECISION RULES

Introduction

Decision rules are the standard operating procedures used by municipal service departments to distribute public services. These rules routinize behavior and simplify decision-making by eliminating the need to consider a variety of alternative solutions to how distributional decisions might be made. The recurring issue of how services should be distributed is resolved by emphasizing rules. Often, decision rules rely on technical-rational criteria. Administrators do not consciously decide to provide some groups and neighborhoods with better and more service than others. Instead, services are distributed on the basis of criteria that are technical in nature, circulation rates for library services, for example.

Because decision rules rely upon technical-rational criteria, the consequences of using them may not be understood outside of the department. Rules are objectively applied. They appear to be fair. However, decision rules have distributional consequences. They incorporate some notion of equity. Often, this conception of equity is implicit rather than explicit.

A consequence of decision rules is that they influence who gets how much of what. In this chapter, we will examine the distributional consequences of a number of decision rules for library services. We will illustrate the distributional significance of rules by providing examples of their operation in a number of cities.

Examples of Actual Library Decision Rules

The rules most often employed to guide the distribution of library services incorporate demand, need, and equality as equity. However, different library departments use different combinations of rules to distribute services. In Oakland, California, the central library received top priority. Although the central library accounted for only 25 percent of the total circulation in the system, it received 60 percent of budget expenditures for personnel and acquisitions. The network of neighborhood branches accounted for 75 percent of the total circulation and received only 40 percent of expenditures. Decision rules also guided the distribution of resources to branch libraries. Expenditures, staff personnel, and new acquisitions were distributed on the basis of circulation rates. The higher its circulation, the greater the share of available resources a branch library received. Since residents of middle and upper-income neighborhoods read more, branches located in these neighborhoods received more resources.

In Houston, expenditures, staff personnel, and bookstock were also distributed on the basis of circulation rates. Consequently, branches located in wealthier neighborhoods received more resources. However, the decision rule used to determine the location of branch libraries employed need as equity. Branch libraries were located so that residents of black and other low-income neighborhoods enjoyed preferred access to branch facilities. That is, citizens with limited mobility lived closer than citizens in wealthier neighborhoods to the nearest branch library.

The cities of Rochester, N.Y., Atlanta, Richmond, Va. and Charlotte, N.C. employ similar rules to distribute new books and materials to branch libraries. In each city, total circulation (demand) plays a major role in resource distribution. That is, branch libraries with high circulation totals receive a larger share of available resources. It is significant that branches located in poor neighborhoods receive a larger share of resources than they would receive if circulation totals alone were used to distribute books and materials. Need as equity (income level) is used to temper demand as equity (circulation totals). In each city, branch libraries are provided with a minimum level of services. High circulation branches qualify for additional shares of available resources.

In Pittsburgh, Boston, and Hartford, a different set of decision rules guides the distribution of library services. The library departments in both Pittsburgh and Boston rely upon equality as equity to distribute new books and materials. In Boston, each branch library receives an equal share of available resources. High circulation branches do not receive additional resources. The decision rules in Pittsburgh are more complex. First, each branch receives a minimum level of resources. Second, use of services, programs, and facilities is an important factor in allocating resources over and beyond these minimum levels. However, this decision rule emphasizes frequency of use of all library services rather than book circulation alone. Consequently, the use rule employed in Pittsburgh differs from the book circulation rules relied upon in Rochester, Oakland, Houston, Richmond, Atlanta, and Charlotte.

A somewhat different rule guides service distribution in Hartford, Conn. Branch libraries are divided into two categories (large and small). Large branches receive more resources than small facilities. Within each category, resources are distributed on an equal basis to branches. However, high circulation branches tend to receive a higher level of resources than low circulation branches.

Beyond these basic decision rules, several additional rules are used to distribute library services in these cities. Some of these rules are identical. For example, in none of these cities are surveys conducted to determine neighborhood preferences for library services. Public meetings with neighborhood groups are not held to ascertain citizen preferences. Instead, the professional staff in each branch is relied upon to determine and respond to neighborhood preferences for library services. Although branch librarians in each city have considerable control over the choice of books and materials they wish to purchase, this authority is limited. In Pittsburgh, for example, department heads in the central library administration (reference, science/technology, art, music, "popular" materials) decide which books and materials should be purchased for the entire system. Branch librarians are limited to making selections from these purchases.

Several different rules are used to determine the location of new branch libraries. In Rochester, three rules are important. Priority is given to a maximum distance rule. That is, libraries are located so that a significant number of residents do not live farther than an acceptable maximum distance from a branch library. In Rochester, this acceptable distance is two and one-half miles. A second rule used to determine the location of new branches represents a combination of size of existing branches and density of neighborhoods. For example, standards are used for the number of square feet of library space needed per 1,000 residents. If a neighborhood is deficient in branch library space based on this density standard, then it is given extra consideration when the location of a new branch is decided. A third factor that affects the location of new branches is the availability of land. Sometimes, sites that qualify on the basis of the above criteria are not available.

In Richmond, the location of new branches is determined by the maximum distance and size and density rules. The acceptable maximum distance to the nearest library differs on the basis of the race and wealth of the neighborhood. Black and other poor residents have limited mobility. Libraries are located so that residents of poor neighborhoods have to travel a shorter distance to reach the nearest branch library.

In Charlotte, the maximum distance (two and one-half miles) and size and density rules are most important in determining library locations. In addition, low-income neighborhoods are given extra consideration in locational decisions since it is felt that greater accessibility will increase use on the part of low-income citizens. Although less important, circulation levels and citizen requests are also considered. Neighborhoods that heavily use available library services and neighborhoods that have been particularly outspoken in seeking additional library service will be given consideration when locational choices are made.

In Hartford, citizen requests are the most important factor in determining the location of new branches. However, a maximum distance rule is also important. As in Richmond, Charlotte, and Houston, the branch library service areas in Hartford are drawn so that residents of poor neighborhoods have to travel a shorter distance to reach the nearest branch. Locational decisions in Hartford are affected by three decision rules: citizen requests and complaints, maximum distance, and the income level of neighborhoods.

Boston employs a single rule to guide locational choices. Priority goes to the oldest branch libraries. When funds for the construction of a new branch become available, the facility will be constructed on or near the site of the branch most in need of replacement (based on age/deterioration). In the past, locational decisions in Pittsburgh were based on a maximum distance rule (25,000 citizens within one mile of a branch library). In addition, citizen requests were also considered. Library officials believe that the maximum distance rule has now been implemented in all city neighborhoods. There have been no requests for additional branch services in the last seven or eight years.

In Atlanta, a maximum distance rule is important. Neighborhoods without a branch library are given consideration in locational decisions. However, the distance rule is not uniformly applied in all neighborhoods. It is felt that poor neighborhoods will not use library services. Limited resources require that consideration also be given to expectations about use in locational choices. These two rules— maximum distance and projected use— are important factors in deciding library sites.

Summary

The rules employed to distribute library services have distributional consequences. Different rules are relied upon to allocate resources and to determine the location of new branches.

The rules used to allocate resources to branch libraries incorporate demand, equality, and need as equity. The library departments in Rochester, Atlanta, Oakland, Houston, Richmond, Charlotte, and Pittsburgh rely upon demand (circulation and use) to allocate resources to branch libraries. High circulation branches receive more resources than branches that are less heavily used. Each branch receives a minimum (or greater) level of services. Branches in poor neighborhoods (low circulation) receive more resources than they would if circulation totals alone determined distributional policy. Need also plays a role. In Charlotte, both high and low circulation branches are assigned more staff personnel than libraries with circulation levels between these extremes. The assignment of more staff personnel in high use branches is made in response to the workload. Additional staff personnel are assigned to branches in low income areas to assist patrons in using materials and facilities.

Only in Boston are resources distributed among branch libraries on a strictly equal basis. High circulation neighborhoods do not receive additional consideration.

In general, a maximum distance rule is most often employed to determine the location of new branch libraries. New branches are located in Rochester, Houston, Charlotte, Richmond, Atlanta, and Hartford so that residents do not live farther than an acceptable maximum distance from a branch library. In Houston, Charlotte, Richmond, and Hartford the distance rule is not uniformly applied among neighborhoods. Since residents of poor neighborhoods have limited mobility, service areas for libraries located in these neighborhoods are smaller than they are for branches located in wealthier neighborhoods. Residents of poorer neighborhoods have to travel a shorter distance to reach the nearest branch. In Rochester, the maximum distance rule is uniformly applied. Each neighborhood tends to be the same distance from library services. Another variation on the maximum distance rule is used in Atlanta. Residents of areas that live farther than an acceptable maximum distance from the nearest library receive special consideration. Anticipated use is also an important factor. New branches tend to be located on the basis of maximum distance and anticipated use criteria.

Although different library departments use different sets of rules to guide distributional policy, three rules are prominent in most of the cities studied. First, provide more resources to the central library for the purchase of new books than it would receive if total system circulation were used to distribute resources. Second, distribute resources among branch libraries on the basis of circulation totals. Third, locate new branches so that a significant number of residents do not live farther than an acceptable maximum distance from a branch library.

Distributional Consequences of Library Decision Rules

A better understanding can be gained of the possible distributional implications of the above rules by examining several rules that could be used to distribute library services. Library departments rely on a combination of rules rather than a single rule to allocate resources. By analyzing the distributional consequences of each rule, the cumulative impact of using a variety of rules will become clearer. Suppose that the following rules were employed to distribute library services:

(1) Library resources (books, newspapers, periodicals, staff personnel, equipment, facilities) should be distributed among branch libraries on the basis of circulation rates. That is, branch libraries with high user levels receive more resources.

(2) In general, the same types of books, materials, programs, facilities, and equipment should be provided in each branch library. The reading preferences of high use branches serve as a guide to the types of books and materials to provide in each library.

(3) Reading preferences can be determined from circulation levels for different types of books and materials and from citizen requests for books, programs, and materials. It is not necessary to regularly survey a sample of residents in each neighborhood in order to determine their preferences for library services.

(4) The location of new branch libraries is influenced by citizen requests and complaints. If the residents of a particular neighborhood have been outspoken in seeking additional library service, that neighborhood will be given special consideration in library location decisions.

(5) The location of new branch libraries is influenced by circulation levels. Neighborhoods that heavily use existing library facilities receive preference in library location decisions.

(6) A maximum travel-time rule influences the location of new branch libraries. No citizen should have to travel more than X number of minutes in order to reach a public library. This goal influences the location of new branches.

Each of these decision rules will have distributional consequences. Rule 1 tends to penalize branches located in black and other low-income neighborhoods since residents of these areas read less. Rules 2 and 3 also work to the disadvantage of poor neighborhoods since high circulation branches determine the types of books, materials, and programs that will be provided in each library. In general, high circulation branches are located in middle and upper-class neighborhoods. Therefore, the reading preferences of upper-income individuals are used as a guide to the distribution of resources for the entire system of neighborhood branch libraries. Since a failure to respond to the reading preferences of black and other low-income citizens may have an impact upon the extent to which these individuals use library services, rules 2 and 3 reinforce the distributional consequences of rule 1.

Rules 4, 5, and 6 also affect who gets what. Since whites are more likely than blacks to contact public officials about service-related grievances, rule 4 tends to operate to the advantage of wealthier neighborhoods. The greater willingness and ability of whites to petition public officials for additional library services, and the willingness of government to respond to these citizen demands, may result in a pattern of distribution that favors better-off neighborhoods. Rule 5 may also penalize low-income areas. Since wealthier citizens read more, the consequences of rule 5 will be similar to the outcomes of rule 4. Rule 6 also affects who gets what. Low-income citizens are less mobile than wealthier individuals. Therefore, the use of an equal travel-time rule is more likely to present a barrier to accessibility to library services for blacks, young children, the elderly, and the poor than it is for wealthier whites. Rules 4, 5, and 6 reinforce the distributional consequences of rules 1, 2, and 3. Accessibility to library service influences the extent to which libraries are used. In turn, circulation levels determine resource distributions to branch libraries.

Rules 1 (circulation), 4 (requests and complaints), and 5 (circulation) incorporate demand as equity. The more the residents of a neighborhood use library services and the more they complain about library services, the more resources and branch libraries they will receive. These rules are not sensitive to need for services. Rule 2 (identical collections) and rule 6 (travel-time) incorporate equality as equity. The identical collection rule tends to reflect the reading preferences of middle and upper-class patrons since it is sensitive to user levels and these groups read more.

The equal travel-time rule also operates to the disadvantages of poor neighborhoods because the poor are less mobile. Both rules may have an influence on user levels. Failure to provide books, materials, and programs that address the preferences of poor people may depress use. Similarly, a distance of even several miles to the nearest library may present little barrier to middle-class patrons. The same distance may preclude use on the part of black and other low-income groups. The evidence suggests that library users in ghetto areas are often school-age children and that user levels drop rapidly as the distance to the nearest library increases. The equal travel-time rule will exert a particularly strong impact upon library use in ghetto neighborhoods.

Reliance on the above rules to guide the distribution of library services appears rational. If objectively applied, they appear to be fair. Closer examination reveals, however, that the cumulative impact of their operation over a long period of time may well depress library use in poor neighborhoods. Low user levels, in turn, will result in fewer resources for branch libraries located in black and other low-income neighborhoods.

Other rules for the distribution of library services are plausible and appropriate. These include:

(1) Resources should be distributed on an equal basis. That is, the same number of books, materials, programs, and facilities should be provided per 1,000 people.

(2) Preferences for library services should be systematically and periodically determined through sample surveys of residents and the types of books, equipment, programs, materials, and activities provided in each branch library should be responsive to the variation in neighborhood preferences.

(3) Library resources should be distributed on the basis of need. Branches in poor neighborhoods should receive more books, periodicals, staff personnel, equipment, facilities, and programs because these citizens have limited access to private library and other educational services and activities.

(4) Accessibility to library services should favor black and other low income neighborhoods because these groups are less mobile, because use drops rapidly with distance, and because patrons of libraries in ghetto areas are often young children. Black and other poor neighborhoods should have more branch libraries.

(5) A major advertising and outreach campaign should be conducted in minority and low-income neighborhoods in an effort to stimulate use of library services. This campaign should include registration drives, increased bookmobile service, and visits to schools, nursing homes, and housing projects.

Each of these rules will have consequences that differ from the outcomes of the rules previously discussed. Rule 1 (equality per capita) provides an equal distribution of resources regardless of differences in circulation rates. Rule 2 (surveys of citizen preferences) and rule 5 (advertising and outreach campaigns) may lead to greater use of library services by minorities and the poor. Rules 3 and 4 recognize that low-income groups have limited access to private library and other educational services and facilities and that the public sector has a responsibility to counteract the disparities in resources and opportunities provided by the operation of the private sector.

The first set of rules tends to incorporate demand (use of services and requests for services) as equity and equality as equity. The second set of rules incorporates need and preference as equity.

Conclusion

Decision rules implicitly entail value judgments about what is fair and equitable in service distribution. Although rules are objectively applied, they have distributional consequences. Rules should be carefully examined to determine their distributional effects. A change in the rules employed to guide distributional decision-making can change the pattern of who gets what.

FOOTNOTES

[1] With the exception of Oakland, California, information on the decision rules used in various library departments was gathered by the authors. Data on library operations in Oakland are from Frank Levy, Arnold Meltsner, and Aaron Wildavsky, Urban Outcomes (Berkeley: University of California Press, 1974.

CHAPTER 4. METHODOLOGY

FOR ANALYZING LIBRARY SERVICE DISTRIBUTION

The purpose of this chapter is to present a framework for analyzing library service distribution. Service analysis should be related to the objectives of library service. The indicators used in analysis also should be related to conceptions of equity, giving these conceptions of equity operational meaning that administrators, other local officials, and citizens can use in judging whether library service distribution is appropriate. An essential aspect of the service analysis framework is that it stresses the use of multiple indicators of service characteristics. Single indicators are not adequate to describe library services. A set of indicators always should be selected. Here the service analysis framework is described, with frequent references to its applicability to the distribution of library services. In this chapter, the analytical framework is applied to libraries in detail.

Categories of Analysis

A service delivery framework should be used to help identify specific indicators for each service. The framework proposed here has several uses. It directs attention to several stages of the service process. It forces the analyst to consider the consequences of the service. It stresses performance, in addition to encompassing workload measures. Use of it leads to indicators that can be related to alternative conceptions of equity.

For every urban service, resources are required. In systems model terms, resources commonly are referred to as inputs. The service delivery framework is diagrammed in Figure 1. Examples of types of service indicators are shown in Table 1. Resources are money, personnel, facilities, and equipment. A useful measure of resources often is expenditures—expenditures for library personnel, for example. For libraries, bookstock indicators are especially important. How many books are there per 1,000 population?

The activities of the urban service system are the ways in which the resources are used. How many total hours were devoted to programs (children's hours, film series) at each branch library on a weekly basis?

Results are what happens as a direct consequence of activities of the service delivery system. Result indicators are essential in measuring the extent to which service objectives are being achieved. How many citizens have used the library? How many books were circulated? It is important to note that results are not always intended. Some citizens may complain about the quantity and quality of library materials available. The result of the service may be dissatisfaction with available services on the part of some users.

Figure 1. Service Analysis Framework

Each service has objectives

involving

Serving population and influencing social conditions

by using

Resources

(Expenditures, personnel, facilities, equipment)

and engaging in

Activities

(time frequency and duration)

having

Results

(direct consequences--intended and unintended--
and especially use of services--amount, rate,
and reasons)

and leading to

Impacts

(changes in social conditions)

Table 1. Examples of Service Indicators

Data for specific indicators and impacts of resources, activities, results are obtained by gathering field data about services and facilities and by conducting surveys of citizens.

Resources	Expenditures ($ per 1,000 population or 100 households)
	Personnel (number per 1,000 population)
	Facilities (square feet of branch library space per 1,000 persons)
Activities	Frequency (hours branch libraries are open per week)
Results	Intended consequences (increase in number of books circulated)
	Unintended consequences (complaints about library services)
	Use of services by amount (number of branch library books circulated per year)
	Use of services by rate (number of branch library books circulated per year per population in service area)
	Use of services by reasons (percentage of persons not using branch libraries because the materials they want are not available)
Impacts	Changes in social conditions (partially identifiable using experimentation or elaborate and complex calculations)

Consequences often are not solely, perhaps not even primarily, a result of the effectiveness of the service system. Substantial use of some libraries may be due to the shortage of alternative recreational and educational opportunities available to nearby residents. These causal relationships, of course, should be taken into account when remedial action is considered.

The impact of a service can be defined as the difference between results given the existence of the service and the conditions that would exist in the absence of the service. This difference is very difficult to identify. How much would dissatisfaction with local government increase if there were no libraries? How would property values change if there were no public libraries?

The best way of identifying service impacts and service results is by experimentation. Experimentation involves comparison between two or more situations differing, ideally, only in the procedure that is applied to them. Measurements are taken of relevant indicators before the experiment, preferably several times over a substantial period, and after the introduction of the new procedure, again preferably several times. The aim of the experiment is to identify differences in the measurement findings and to be able to relate these differences to the change in the experimental conditions. Isolating differences is difficult in the real world, because two or more situations never are identical in all respects other than the experimental variables. Nor do situations hold still. As time passes, conditions change, other than the experimental conditions. Therefore, identifying the new procedure as the cause of the changes measured cannot be done with certainty.[1] Isolating effects is much more difficult with impacts than with results, since social conditions can be influenced by so many variables other than those that are service related. Because of the difficulty of measuring service impacts, service distribution analysis should rely on indicators of resources, activities, and results.

Citizen Surveys

Surveys of citizens may be used to obtain information about the results of library services. Opinions may be the best information available about some service results. Information about use may be obtained in surveys. People can be asked how often they use particular libraries. They also can be asked whether they know of the existence of certain facilities or programs in libraries. The rate at which people use libraries may be influenced by whether they feel safe when using the library. Their responses will help identify reasons for use and non-use of facilities and programs.

People also can be asked for their general opinion about library services. Opinions of citizens can be an indirect result of service characteristics. We use the term indirect result because a number of forces may influence opinions about services. These include feelings of trust in government, confidence about being treated fairly, and attitudes toward authority. Administrators may believe a service is being delivered effectively, based on performance indicators such as those referred to earlier. Residents may have a different opinion. Opinions may not be the same in all parts of the jurisdiction. Opinions may be consistent with the performance measures, or they may be inconsistent. Sometimes administratively useful information may be obtained. Such information may be useful in making decisions about priorities among different services, about where to invest resources geographically for library services, and about how to modify public information programs. However, when opinion data differ from other data about resources, activities, and results, the objective non-opinion data should be emphasized in making decisions.

Opinion indicators also need interpretation. Suppose, for example, that resident satisfaction with libraries is much lower in one neighborhood than in other neighborhoods. How should this be interpreted, if the indicators of resources and results seem to describe a service pattern contrary to the residents' opinions? One explanation could be that their expectations are higher than those of people in other neighborhoods. Therefore, they are less satisfied even though they receive better services. Another interpretation could be that they are disaffected from government. In general, they expect to receive inferior services. Therefore, they conclude that whatever level of service they receive must be inferior to services received elsewhere. What action should be taken? The problem may be more one of public relations than of service delivery. It could be approached in that way. This possible pattern of findings also suggests that opinion measures used in isolation from performance measures have the potential of leading to questionable conclusions.

Operationalizing Conceptions of Equity

Equity concepts should be related to categories of indicators (resources, activities, and results) for analyzing service distribution patterns. Service distribution refers here to the geographic pattern. Equity concepts often apply to individuals. Analytical methods may describe services distributed to individuals. In practice, however, library services are delivered to areas. Therefore, geographic analysis is the only practical way of analyzing library services. Considerations of cost reinforce the practicality of geographic analysis. Indicators of need, such as income data, can be used to supplement population, household, age, and racial data for describing geographic areas. Techniques for describing geographic areas for analytic purposes are discussed in Chapter 5.

Earlier, five conceptions of equity were discussed briefly.[2] These are equity based on equality, need, demand, preference, and willingness-to-pay. The categories of analysis (resources, activities, and results) described here can be used to give concrete meaning to these equity concepts. The importance of making equity concepts concrete can be illustrated with equity as equality. Equity as equality could mean that equal resources per capita should be provided. For libraries, this could mean that each neighborhood should receive the same number of books per 1,000 residents. Equity as equality also could mean that equal activities per capita should be provided. For libraries, it could mean that each branch is open the same number of hours per week. Equity as equality also could mean that equal results per capita should be provided. For libraries, it could mean that book circulation rates per 1,000 residents are equal. There are a number of indicators of resources, activities, and results that can be used to analyze library services. Each equity concept (equality, need, demand, preference, and willingness-to-pay) needs to be operationalized in terms of these analytical categories.

These categories of indicators provide a means for administrators to compare their concepts of equity with the service distribution pattern as it exists. Analysis and interpretation of these indicators can be included in the decision-making process as changes in departmental procedures, programs, operating budgets, and capital expenditures are considered.

Indicators of Service Distribution for Library Services

Measurement indicators are needed in order to determine how library services are distributed. These indicators can then be compared across neighborhoods or service districts. The comparisons may suggest that action should be taken in order to achieve a more equitable pattern of service distribution. Table 2 presents indicators of service distribution for resources, activities, and results.

Table 2. Library Service Indicators

Indicators by Measurement Category	Data Source
Resources	
1. Total number of books, newspapers, periodicals per 1,000 people for library branches/service district.	Department records.
2. Total number of new titles per 1,000 people acquired during last five years for library branches/service district.	Department records.
3. Distance (walking and travel-time) from residents to nearest branch library/neighborhood. Number of residents more than X miles from a branch library.	Department study and analysis.
4. Number of staff personnel per 1,000 people for branch library/service district.	Department records.
5. Number and type of special collections; black and other ethnic history and literature, business collections, materials and information on public services and job-training, "how-to-do-it" manuals for branch library/service district.	Department records.
6. Number and types of special programs and activities; children's hour, registration drives, film series, bookmobile programs, advertising campaigns, visits to schools, housing projects, and nursing homes for branch library/service district.	Department records.
Activities	
1. Total hours of programs by type in each branch library weekly/service district; children's hour, film series, etc.	Department records.

2. Total hours spent each week on programs outside the branch library/service district; registration drives, bookmobile service, visits to schools, housing projects, and nursing homes, advertising campaigns.	Department records.

Results

1. Number of books in circulation from branch library per 1,000 residents of library service area.	Department records.
2. Total frequency of use of all branch library services, programs, and activities per 1,000 residents/service area.	Department records.
3. Percentage of residents in neighborhood dissatisfied with branch library collection, programs, facilities, activities, staff assistance, hours of operation, accessibility to library, space, cleanliness, comfort, speed of service.	Citizen survey.
4. Percent of neighborhood residents mentioning these factors as reasons for non-use of branch library.	Citizen survey.
5. Number of unmet requests for books and materials per 1,000 patrons of branch library/ service district.	Department records.

Discussion of the Indicators

Expenditure data are probably the least useful for purposes of analyzing the geographic distribution of library services. A higher level of expenditures in a particular branch library does not mean that the residents of that service area are receiving superior library services. Expenditure data, if broken down by expenditures for personnel, new acquisitions, and special collections, can provide a starting point for comparing the services available in one branch library with the services available in another. However, it is more useful to collect information on the number and type of books and materials available, the number of new titles purchased in the last five years, the diversity of the collection, ease of accessibility to library services, the physical condition of the branch library, the probability of a patron obtaining a book if requested, reasons for non-use of library services, frequency of use, and the number and types of special programs and activities available.

The most important resource indicators are total number of books and periodicals available in branch libraries, number of new titles recently acquired, number and type of special collections and programs, and distance to the nearest library. Total number of books per capita is a vital measure of neighborhood service distribution and requires little justification. It is the single most important indicator of the variation in library service levels. However, total number of books per capita should be supplemented with other measures of service distribution. The number of new titles indicator is important because two branches may have an equal number of books per 1,000 residents. However, the collection in one branch may contain a large number of outdated volumes. Data on the number and type of special collections and programs should be gathered because these indicators provide information on the diversity of services offered in branch libraries. This information will allow the public official to determine if neighborhood preferences for library services are reflected in the actual collections and programs available in neighborhood branches. The distance to the nearest library indicator is important since accessibility may have an effect on user levels. Some citizens will not use library services if they have to travel too great a distance. Citizens in some neighborhoods may enjoy better accessibility than others. The distance indicator can be used to determine the variations in access to branch library services.

The most important activity indicators are the total hours of programs offered each week in branch libraries and the total hours spent each week on programs outside of the library (registration drives and visits to public housing projects). The indicators are significant because the effort devoted to these activities (film series, registration drives) may increase use of library services in some neighborhoods. The variation in the total hours invested in special programs and activities is a measure of the extent to which individual branch libraries are responsive to differences in neighborhood preferences.

The most important result indicator is book circulation per capita. However, attendance at library programs and activities and use of facilities are also valuable measures of the results of library services. Residents in some neighborhoods may prefer to use services other then books. Book circulation alone will not index this additional use dimension. Another useful result indicator is the number of unmet requests for books, materials, programs, and activities. This indicator is a direct measure of the extent to which the branch library is providing adequate services. Information on citizen opinions can be used to identify reasons for nonuse of services and to supplement data on the indicators of resources, activities, and results.

How to Relate Service Indicators to Equity Concepts

These service indicators can be used to analyze achievement of the three main equity concepts— equality, need, and demand. To make judgments about service equality, service indicators should be compared with population indicators (per capita, per 100 persons, per 1,000 persons). Racial data can be used to determine whether black areas receive equal treatment. To make judgments about need, service indicators can be compared with indicators about the income (or the housing value) of residents within the service district. Income will be a clue to ability of residents to purchase books themselves. It also will provide clues to the availability of private study space for students and ease of transportation to libraries. To make judgments about demand, service indicators can be compared with use of libraries (for example, number of books available to be borrowed per user). Most of the indicators in Table 2 can be used for each of these purposes. In Table 3 below, one indicator of each type (resources, activities, and results) illustrates how to relate service indicators to equity concepts.

Table 3. Relating Library Indicators to Equity Concepts

Equality

Number of books per branch library/1,000 persons in service district (and nearby unserved area assigned to the branch service district)[1]

Hours of films per week/1,000 persons in service district

Number of books in circulation/1,000 persons in service district

Need

Number of residents more than X miles from a branch library/mean housing value of residents in the area unserved

Number of hours spent on programs outside the branch library/mean housing value of residents in the service district

Percentage of persons dissatisfied with branch library materials, facilities, and procedures/mean housing value of residents in the service district

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[1] If some areas lie outside the standard service radius for branch libraries, the people in these areas should be assigned to the nearest accessible branch for purposes of these calculations.

Demand

Number of staff personnel per branch library/100 weekly users of the branch library

Number of weekly hours of children's programs/100 children per week attending children's programs

Number of books circulated/1,000 persons in service district

Most of the indicators of resources, activities, and results listed in Table 2 are available in library department records. However, information on citizen attitudes about library services and measures of accessibility to library services may require an additional data collection effort. It should be noted that library service areas or districts are difficult to develop. Since many of the indicators of resources and results are valid only on a per capita basis, it is essential to develop a measure of the area served by a branch library. This issue is discussed in Chapter 5.

Making Equity Judgments

Distributional analysis can assist public officials in making decisions about library department operations. In order to aid in decision-making, comparisons of indicators should be made across library service areas. Suppose that a comparison of service area A (white middle-class) with service area B (predominately low-income black) reveals the following:

1. Area A has three times the number of books, periodicals, staff personnel, new titles, space, and facilities (resource indicators) per 1,000 residents as area B.

2. Area A provides generally the same types of books, materials, and special collections (resource indicators) as area B.

3. Area A offers more special programs, such as childrens' hours and film series, than area B (resource indicator).

4. The average distance (travel-time) from residents to the branch library is about equal in areas A and B (resource indicator).

5. The time spent on registration drives is similar in A and B but slightly more time is devoted to bookmobile services in B (activity indicators).

6. The percent of residents of area A registered at the branch library is three times as high as the percent registered in B (result indicator).

7. The total circulation rate in A is three times as high as in B (result indicator)

8. The circulation per 1,000 persons registered is twice as high in A as in B (result indicator).

9. Fifty percent more books are circulated per 1,000 residents through bookmobile services in area B than in area A (result indicator).

10. Attendance per 1,000 residents at special library programs— film series, etc.,— is approximately equal in areas A and B (result indicator).

11. Twice as many complaints about branch library services are made in area A as in area B (result indicator).

12. Probability of a library user obtaining a particular book if requested is twice as good in area A as in area B (result indicator).

Only under demand as equity is the above pattern of service distribution equitable. Branch library A (white middle-class) receives more resources— books, periodicals, staff personnel, new titles, space, facilities— than library B (low-income black). Further examination reveals that resource allocations are made on the basis of total book circulation. A has three times the total circulation of B and receives three times the resources. From the standpoint of demand as equity, this pattern of resource allocation is rational and responsive. Library resources are provided where they are used. Branch A receives more books and materials because it has more patrons. Circulation levels determine who gets what.

The service distribution indicators can be interpreted in other ways. First, resource allocations appear to be a function of total circulation. Although branch A receives three times the resources of B, circulation per 1,000 registered patrons in A is only twice as high as in B. If the goal of the branch library is to provide services to a specified geographic area, public officials might choose to re-evaluate a decision rule which ties resource distributions to total rather than to per capita user levels. If per capita circulation were used as a guide to the distribution of books, materials, expenditures, and staff personnel, branch A would receive twice rather than three times the number of resources allocated to B.

Second, the same types of books, materials, programs, special collections, and activities are provided in both branch libraries. No effort is made to respond to differences in neighborhood preferences for library services. This may have some undetermined effect upon user levels. Third, an examination of the service indicators reveals that Branch A offers more special programs and activities such as film series. However, attendance per 1,000 residents at special programs is approximately equal in both branches. This finding suggests that more resources should be devoted to special programs and activities in B. It also suggests that attendance at, and use of, special programs and facilities might be a better guide to resource distribution than book circulation levels. B would receive more resources under an "attendance at special programs" rule than it does under the total circulation rule. It appears that library users in area B have a greater preference for special programs than for books.

A fourth point to note about the service indicators for A and B is that travel-time to the branch library is equal. However, the residents of area B (low-income black) are less mobile. Since accessibility to library services may have an impact upon use, walking distance in low-income neighborhoods would be a more appropriate measure of accessibility. This information could be used by public officials in future decisions about the location of new branch libraries.

The pattern of service distribution for branches A and B also reveals that more time should be spent on efforts to register the residents of area B. Although a similar effort is devoted to registration drives in both service areas, the percent of residents registered in A is three times as high as the percentage registered in B. The low registration and circulation levels in B suggest that an increase in the former might have an impact upon the latter.

The data also suggest that more resources might be devoted to the bookmobile program in area B. Although the resources allocated to bookmobile services approach equality in the two service areas, fifty percent more books are circulated as a result of the bookmobile program per 1,000 residents in area B. This finding also suggests that accessibility to library services may exert a major impact upon user levels in low-income neighborhoods.

The comparison of service indicators for areas A and B reveals that resources are allocated on the basis of demand. High circulation branches receive more books, materials, staff personnel, facilities, and programs. Since the middle-class residents of A read more than the low-income residents of B, branch A receives more resources. The distribution data also suggest that little effort is made to respond to differences in neighborhood preferences for library services, that resources are allocated on the basis of total rather than per capita circulation, and that book circulation rather than attendance at special programs and activities is employed as a guide to the distribution of resources among branches.

The pattern of distribution described above is inequitable under equality, preference, and need as equity. Library B does not receive equal resources (equality as equity) or more resources (need as equity). No effort is made to determine the reading preferences of area B and to respond to these preferences (preference as equity). The decision rule used to distribute library resources is total circulation. This rule has adverse consequences for branch B. High user levels produce high resource levels. In turn, a greater number and variety of resources may well have the result of increasing circulation.

Conclusion

Distributional analysis can provide a basis for evaluating equity in service distribution. To determine whether library services are distributed on the basis of equality, need, or demand, service indicators should be collected and analyzed. Once public officials have decided how library services should be distributed, distributional data can be used to bring about change. Public officials may decide that circulation totals are an inappropriate guide to resource allocations and that a greater effort should be made to respond to neighborhood preferences. More resources might be devoted to citizen surveys, special collections and programs, registration drives, outreach activities, advertising campaigns, and bookmobile services.

Or, officials might decide that the goal of the library department should be equal results (equality of circulation and frequency of user rates per 1,000 residents). An equality of results goal would likely require more resources in low-income branch libraries.

Distributional data can also be used in capital programming and planning. An analysis of accessibility to library services may reveal that a new branch library should be located in a low-income neighborhood in order to achieve equality of access for all residents.

The collection and analysis of service indicators (resources, activities, results) on a comparative basis for a library system can provide useful information on how library services are distributed to different areas and groups. This information can be used to determine:

1. The distributional consequences of decision rules.

2. If some neighborhoods receive more and better library services than others and if the distributional pattern for library services differs on the basis of race and wealth.

3. The conception of equity used to guide distributional decisions.

4. The changes in capital and operating budgets and departmental operations that need to be made in order to bring about changes in the pattern of library service distribution.

FOOTNOTES

[1] Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research, (Chicago: Rand McNally & Co. 1963); Harry P. Hatry, Richard E. Winnie, and Donald M. Fisk, Practical Program Evaluation for State and Local Government Officials, (Washington, D.C.: The Urban Institute, 1973); Carol H. Weiss, Evaluation Research, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972).

[2] These five conceptions of equity are discussed extensively in Chapter 2 of William H. Lucy and Kenneth R. Mladenka, Equity and Urban Service Distribution (Washington, D.C.: National Training and Development Service, 1978).

SELF-EVALUATION QUESTIONS

1. What are the main components of, and the relationships within, the service delivery framework suggested for guiding the selection of indicators?

2. Define service resources, activities, and results.

3. What is the definition of service impacts? Why are impact indicators difficult to identify and use?

4. Why are citizen surveys useful for some services? Are the indicators obtained in this way likely to be indicators of resources, activities, or results?

age, education) are evenly distributed as well. Given these assumptions, the aggregate population characteristics available for the entire tract can be used for the tract population. If the tract is 30 percent black and has a median family income of $8,500, it is assumed that the portion of the tract population included in the service area exhibits these same characteristics. However, these assumptions may not be valid. If the population is not evenly distributed and/or homogeneous in terms of race and income, these estimations will be misleading.[1]

The alternative procedure is to use block data. Each census tract is divided into a number of block units. In those instances where the boundaries of a service area split tracts, block data can be used to give a more accurate indication of the size and characteristics of the population than that obtained through the estimation procedure.

However, there are disadvantages associated with the use of block data. First, they are cumbersome and time-consuming to work with. A very large number of overlays and calculations are required to accurately match blocks with a portion of a tract. Data are sometimes missing for individual blocks. Missing data again require that estimations be made. In addition, block information is limited to population, number of blacks, average contract rent, and median value of owner occupied housing units. The limited nature of block data presents a problem when efforts are made to refine the size of the service area on the basis of age, educational level, income (percent families earning an income below the poverty level), and mobility differentials (percent households without an automobile).

When service areas split census tracts, the choice between an estimation procedure and the use of block data is, in part, a choice between ease of measurement and richness and detail of information (for tracts) on the one hand, and precision of measurement (for blocks) on the other. If resources permit, both procedures should be used. In this way, the margin of error associated with the use of the tract estimation technique can be determined. If the margin of error is acceptable, analysts will be able to take advantage of the richness of data available for tracts. If the margin of error is unacceptable, block data will be required.

The standard of equity employed to guide the distribution of library services can also provide a clue as to the data to use in constructing service areas. If need as equity is selected, census tract data may be preferable since information is available on family income, poverty levels, number of households without an automobile, and age. However, need can be inferred from block data (housing value) which is available in block statistics.

Demand as equity may also require that census tracts be used to develop service areas. One of the strongest correlates of demand for library services is the educational level of the population. The higher the educational level of a neighborhood, the more library services the residents should receive. Since information on educational attainment is not available for blocks, census tract data may be required to index demand for services.

Block data are more appropriate than census tract data for equality as equity. Under equality as equity, population is the important consideration. Variations in need and demand are ignored. Therefore, data on income and education are not necessary. The goal of equality in distribution is to provide the same level of services to the same number of people. Since blocks provide more reliable population estimates, block data are preferable to census data.

Relating Socioeconomic Indicators and Measures of Library Service Distribution

Once the service areas have been selected, information (if tracts are used) can be collected on race, income, age, education, and housing characteristics. The library service indicators can then be standardized on the basis of population. The public official can use this information to compare library service areas that differ on the basis of race, income, age, and education in terms of number of books, periodicals, staff personnel, expenditures, new titles, space, facilties, special collections, and programs per 1,000 residents. Resources per capita can also be compared with results (circulation, registration, attendance, frequency of use, citizen complaints per 1,000 residents) across service areas.

Once the service areas have been plotted for each branch library, those neighborhoods served by a branch can be compared with those neighborhoods without library service. Appropriate questions to ask include the following:

1. What percentage of the population is without library service?

2. Do those neighborhoods without library service differ from neighborhoods served by a branch library on the basis of race, wealth, and education? Do neighborhoods without library service tend to be black and low-income while areas with library service are middle and upper-income?

3. Why do some neighborhoods lack library services? What changes should be made in the capital budget to rectify the situation if the reasons for failing to provide library services in some neighborhoods aren't sufficiently convincing?

Footnotes

[1] One study found that the margin of error involved in these estimates was only 10 percent. See Donald M. Fisk, Harry P. Hatry, Kathleen Hudak, Kenneth Webb, and Robert Fiore, How Effective Are Your Community Recreation Services? (The Urban Institute: Washington, D.C., 1973). Also see this report for an excellent discussion of the mechanics and procedures for plotting physical accessibility service areas.

CHAPTER 6. MANAGEMENT STRATEGIES

What should be done with the concepts of equity and decision rules and the methods of distributional analysis? Why are they important? Who should use them and how should they be used? These questions have been addressed to some extent in preceding chapters. Here we will examine them, stressing the action contexts in which decisions should be made. This final chapter will be organized to cover the following topics:

How can distributional analysis be used in setting goals?

Which equity concepts should be used for distributing each service?

What decision-making sequence should city managers, mayors, and other officials engage in to evaluate the equity of service distribution in their communities?

How can decision rules and service indicators be selected to facilitate implementation of specific equity concepts for each service?

Setting Goals

Establishing goals is one of the most difficult tasks that government administrators face. One occasion when this difficulty becomes apparent is when administrators try to analyze the effectiveness of public services. Even if indicators of effectiveness can be agreed upon, the problem of how much of a particular indicator is a sign of satisfactory performance is perplexing. How far should a citizen have to travel to reach the nearest branch library? How many library books should be available per 1,000 residents? Should these issues be decided with the aid of national standards? Can they be related to citizen preferences and satisfaction?

Reference to standards set outside the community may be helpful in some instances. But reference to standards determined inside the community is essential. One basis for establishing standards is an equity and service distribution perspective. Public officials should decide the extent to which services should move toward, or away from, equal distribution among neighborhoods. If there is to be variation among neighborhoods, how much should there be? Why should variation be tolerated, accepted, or sought?

General distributional goals can be established without systematic data analysis. But specific goals should be based on analysis of the distribution pattern. Public officials should determine who is getting how much of what. They should decide whether the variation that exists is acceptable or not and then set goals for reducing the variation or for perpetuating it. Is a 50 percent variation in number of books per capita among neighborhoods acceptable? What should be done to reduce it? Is the variation acceptable in the number of residents in different neighborhoods who are more than one mile from a neighborhood library? How should priorities for locating new libraries be established?

It is not adequate to maintain that the goal of the library department is to provide free books for all citizens. The goal is of little value because it is too vague to permit precise measurement and evaluation. It does not permit the public official to answer the following questions:

1. Do some neighborhoods receive more library services than other neighborhoods?

2. Do the poor receive more than the rich? Do whites receive more than blacks?

3. If some neighborhoods receive more library services than other neighborhoods, is this pattern justified? Why?

4. Do all citizens have an equal opportunity to take advantage of public library services?

5. Are some library services not being used by some citizens because these services are not responsive to neighborhood preferences?

6. Are library services distributed on the basis of equality (resources, activities, results), need, demand, or preference? Why? Is this pattern equitable?

7. Where should the next new branch library be located? Why?

8. Should a budget increase for libraries be spent to hire more personnel or to provide more programs and activities?

9. Should additional funds for the library department be spent for a new library site in order to equalize travel-time by auto from each neighborhood, or should facilities at an existing library be expanded in order to meet citizen preferences?

Distributional analysis of service patterns can help provide answers to these and many other questions. The information can be used to guide budget preparations and to make changes in departmental operations.

Although the data gathering process will be most efficient if data are gathered to serve several purposes, in some instances administrators may gather data solely to analyze service distribution equity. What should trigger this decision? When should administrators decide to gather and analyze data for the purpose of evaluating service equity?

The most important situations in which administrators should gather and analyze data to evaluate the equity of service distribution are:

1. When they believe that an important aspect of library services may be distributed in ways which they consider inequitable, but they are not sufficiently confident of their position.

2. When they believe there is a reasonable chance that a change can be brought about if their beliefs about service inequities prove to be accurate.

3. When a substantial number of complaints have been made about allegedly inequitable service delivery.

When any of these conditions exist, administrators should consider having data about the relevant aspects of service distribution gathered and analyzed. Data analysis decisions should be based on the following considerations:

1. Which data items are most directly focused on resolving the beliefs of administrators about possible library service inequities.

2. Which data items can be gathered at least cost.

3. Which data items will aid the most in meeting related policy-making needs, such as needs for capital programming, evaluation of service effectiveness, and management by objectives.

Decision-Making Sequence

When an administrator wants to involve himself in distributional issues, he must do so in a sequence of actions. While sequences will vary some from situation to situation, the steps described below are a reasonable sequence to follow.

1. Determine the decision rules that are used to distribute library services.

   a. Obtain written statements from department officials detailing the decision rules that are used.

      Example: Books are allocated to branch libraries on the basis of circulation rates.

   b. If a particular aspect of service distribution, such as a decision about where to locate a neighborhood library is influenced by more than one decision rule, then obtain a statement from department officials in which they rank the rules that influence the decision in the order of their importance.

      Example: The first decision rule is to give priority to areas deficient in library facilities based on distance and density criteria. The second decision rule is to give priority to those areas eligible on the first criteria where requests also are numerous.

2. Evaluate the implications of using these decision rules.

   a. What conception, or conceptions, of equity do the decision rules reflect?

      Example: The decision rule about distributing books on the basis of circulation rates reflects a demand concept of equity.

   b. Estimate who tends to benefit from the use of these decision rules based on:

      — General tendencies that the use of this conception of equity has, drawing on the discussion in Chapter 2 about the implications of equity concepts.

      Example: If books are distributed on the basis of circulation, one can expect that branches located in wealthier neighborhoods will receive more books because circulation is usually higher in these neighborhoods.

      — Specific tendencies which seem to apply to the distribution of a particular service in this specific community.

      Example: The specific pattern that will occur by basing distribution on circulation can be determined only by knowing the specific pattern of circulation among neighborhood branch libraries.

   c. Potential beneficiaries should be estimated in terms of areas (neighborhoods) and types of people (age, income, and racial groupings).

      Example: Potential beneficiaries from relying on requests for neighborhood libraries to supplement priorities derived from areas experiencing density and distance deficiencies will depend upon analyzing the characteristics of the residents in high request areas where space deficiencies exist. General knowledge cannot provide this answer. Specific data must be obtained.

3. Decide whether you disagree with, or doubt the appropriateness of, the decision rules that are used by considering:

   a. Which conception, or conceptions, of equity you believe should generally be applied to library services.

   b. Whether the decision rules used in the library department are consistent with this conception of equity.

   c. Whether you believe the consequences of using the decision rules are desirable.

4. If you question the appropriateness of the decision rules, discuss your concerns with your staff and with department officials. Discuss:

   a. Whether your concerns are justified.

   b. What additional steps to take, such as adopting new decision rules, identifying decision rules used in other communities, and gathering and analyzing data about library service distribution in your community.

5. If you are convinced that changes should be made, adopt revised decision rules, after:

   a. Deciding which conception or conceptions of equity should be applied.

   b. Deciding what general distribution of library benefits is appropriate.

   c. Deciding what decision rules would best achieve the distribution sought.

   d. Reviewing the implications of the proposed decision rules for total cost, unit cost, service effectiveness, administrative practicality, and political ramifications.

An additional optional step would be to consider the decision rules that are used in other communities, by referring to the discussion of decision rules in an earlier chapter, and/or by contacting officials in other communities.

Selecting Decision Rules to Implement, and Indicators to Monitor, Equity Concepts for Library Services

The discussion of a suggested decision-making sequence makes clear the value of carefully integrating use of equity concepts, decision rules, and service indicators. The value of this approach can be illustrated in another way. For the sake of illustration, suppose that the equity concepts one wishes to apply to library services have been selected. Decision rules to implement those equity concepts then can be identified. The indicators of service distribution that will facilitate judgments about the appropriateness of the implementation of the equity concept also are rather readily discerned. An example will illustrate.

Suppose that library services are to be distributed on the basis of the equity concepts of equality, need, and demand. What decision rules will implement these equity concepts? Though not the only possibilities, the following decision rules would be reasonable ones to use in implementing equality, need, and demand as equity.

1. Distribute a substantial percentage of available operating funds for the purchase of new books, materials, and equipment among branch libraries on an equal basis, even though circulation rates among neighborhood libraries may differ (equality).

2. Provide somewhat more funds to branches with high user levels (demand).

3. When deciding upon the location of a new branch library, priority will be given to low income areas (need).

The first and second decision rules incorporate both equality and demand as equity. A basic level of library services is provided on an equal basis. However, user rates are higher at some branch libraries. The second rule is responsive to citizen demand by providing somewhat more resources to branches with high circulation rates. The third rule recognizes that residents of low-income areas are less mobile than wealthier citizens and that ease of accessibility to library services may have a significant impact upon use. Therefore, this rule incorporates need as equity by providing more branch libraries in low-income areas.

The following indicators would enable public officials to determine whether the pattern of service distribution for branch libraries corresponded with their intentions to distribute services on the basis of equality, demand and need.

1. Number of books per 1,000 residents in the library service area (resource indicator).

2. Circulation rates per 1,000 residents (result indicator).

3. Distance (walking and travel-time by auto) from each neighborhood to the nearest library (resource indicator).

These indicators will allow public officials to determine the number of books per capita (equality) and the circulation rates (demand) in each branch library service area. Comparisons can then be made across service areas to determine if books are distributed on the basis of both equality and demand. An analysis of the locational pattern for branch libraries will allow the public official to determine if residents of low-income neighborhoods live closer to the nearest library than wealthier citizens.

Once the conception or conceptions of equity that the public official wishes to employ have been identified, the decision rules appropriate for implementing the conception of equity can also be identified. The linkages among equity concepts, decision rules, and indicators of service distribution can be identified by careful thought and systematic attention. What looks like a complex even esoteric subject when examined abstractly becomes readily manageable when specific decisions are confronted.

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HANDBOOK FOR ANALYZING THE DISTRIBUTION OF PARK SERVICES

Module 4

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CHAPTER I. THE PARADOX OF URBAN SERVICE DISTRIBUTION: THE ROUTINE AND THE MYSTERIOUS

The provision of most local public services involves a paradox. Most services are routine. Nearly everyone is familiar with them—police, fire, refuse collection, water, parks, recreation, libraries, sewage disposal, bus service. Yet little is known— by citizens, by elected officials, even by administrators and planners— about who gets how much of them. Deciding who gets what is the essence of politics. The provision of services to people is the essence of administration. But administrators rarely systematically analyze who gets how much of the services they distribute. Instead, they use decision rules that seem reasonable to routinize service distribution. These rules emerge from professional standards, from history and custom, from the pursuit of efficiency, from aspirations for effectiveness. What are the consequences of these decision rules? What are the alternatives administrators should consider in deciding whether a service distribution pattern is equitable? What are the main conceptions of equity? How are decision rules related to service distribution patterns? How should service distribution be measured and analyzed? These are some of the questions that are examined in this handbook about the distribution of parks services. The objective of our discussion of these questions is an attempt to make equity a concept that park administrators and other local officials can use in practicing their craft, just as they use the concepts of efficiency and effectiveness.

Conceptions of Equity

Every service distribution pattern reflects a conception of equity. The conception of equity may be unarticulated. Nevertheless, it will be manifested in decision rules, in routine procedures for distributing services. In interviewing local government officials, we have found that two conceptions of equity were most frequently mentioned in their responses. The first is that everyone should receive equal services. The second is that local officials should respond to demands. Need is a third conception of equity that is used for certain services. The argument is that as needs vary, services also should vary. For example, since low income persons have less ability to pay for private recreation, it can be argued that they should receive more public recreation and park services to compensate for this deficiency.

Preference represents a fourth conception of equity. This notion of equity assumes that consumer preferences should determine the quantity and quality of services that local governments provide. Preferences differ from demands in that they include unarticulated demands as well as those that are expressed. Unarticulated demands must be elicited.

The fifth conception of equity is that willingness-to-pay should determine service distribution. Choice is regarded as the best guide to preference and choices are thought to be most meaningful when services are paid for directly. User charges and special assessment financing implement the willingness-to-pay concept of equity. Since willingness-to-pay is related to ability to pay, the implication for service distribution is that relatively well-off persons are likely to obtain more of the service provided in this way.

Conceptions of equity are implemented, explicitly or implicitly, through decision rules. Decision rules are rules-of-thumb, routine procedures, customary practices that determine how most operating and capital expenditures are made. Decision rules have consequences for the distribution patterns for each service. A few examples will indicate the effects that decision rules have.

In Pittsburgh, park administrators say that citizen requests are given the most weight in determining which neighborhoods will receive new neighborhoods parks. In Hartford, Connecticut, top priority, according to park administrators, was given to neighborhoods which were deficient in park acreage relative to their population.[1]

Service Effectiveness

Administrators should evaluate services in terms of their achievement of service objectives. Varying degrees of achievement of service objectives suggest whether services are more, or less effective. Judgments about service effectiveness should be made cautiously, because conditions often are influenced by events other than those involving the service itself. But one aspect of assessing service effectiveness is clear. It is not adequate to determine community-wide totals for the number of residences more than an acceptable distance from a park. It is not satisfactory to have no one exceeding an acceptable distance from parks in one neighborhood and 50 percent of the residents exceeding that distance in another neighborhood. Geographical distribution is an integral part of service effectiveness. Administrators should analyze service distribution as a basis for estimating effectiveness and in order to provide a basis for making judgments about service equity.

The essence of the methodology proposed for analyzing the service distribution pattern is that multiple indicators of service characteristics should be used. A framework should be used that encourages attention to the entire service delivery process. The framework proposed here uses four categories to analyze service distribution. These categories are resources, activities, results, and impacts. The first three categories have the greatest usefulness. Often the analysis of service distribution has relied upon resource indicators— expenditures and personnel in particular. Indicators of service activities and results also should be stressed. In fact, service analysis that depends upon resource indicators may be seriously misleading.

Purpose of This Handbook

The purpose of this handbook is to show administrators and students how the concepts of equity and service distribution can be useful in local parks planning and management. Efficiency and effectiveness are traditional goals of public administration. Methods have been developed to make these goals operationally useful. Equity is espoused, but its meaning is obscure. The undoubted importance of equity makes its meaning worth searching for. Equity will be a more useful concept, if its several meanings are recognized and if administrators, and others, try to select carefully the particular conception of equity most appropriate to their service, circumstance, and values. The key to operationalizing equity, however, is to develop methods to analyze service distribution and to identify the decision rules whose use leads to a particular pattern of service distribution. Concepts of equity, decision rules, and service distribution patterns then can be related to each other. Through this interaction, local officials can decide whether to change any, or each, aspect of the service distribution network— the dominant conception of equity, the decision rules, and/or the service distribution pattern.[2]

FOOTNOTES

1. References in this chapter to decision rules and processes used in various communities are based on interviews with local government officials conducted by the authors.

2. The book and handbooks that accompany this publication, by the same authors, deal with police, solid waste collection, and libraries, and the general subject of Equity and Urban Service Distribution. They examine equity concepts, decision rules, and service distribution information systems in detail for these services. Legal issues are examined in Chapter 5 of the book by the authors entitled Equity and Urban Service Distribution, published by the National Training and Development Service.

CHAPTER 2. EVALUATING AND DECIDING THE DISTRIBUTION OF LOCAL PARKS

This chapter has two main parts. First, conceptions of equity are discussed as they apply to the issue of parks distribution. Second, decision rules for parks distribution are examined. Consideration is given here to the role of national, and other, standards.

Equity

Five conceptions of equity are applicable to local government services. 1) Equity as equality. Services should be distributed equally to each neighborhood. 2) Equity based on need. Services should be related directly to the need that different people have for the services. 3) Equity based on demand. Services should be distributed in proportion to the demand for them. 4) Equity based on preference. Preferences include articulated and inarticulated demands. Not everyone who wants a service requests it or uses it. Services should be related to preferences, not just to expressed demands. 5) Equity based on willingness-to-pay. Willingness-to-pay measures both the presence and intensity of demand. People must choose to make an expenditure, and, therefore, they will not have these same funds to make another expenditure. Equity cannot be defined explicitly for all purposes, but it can be pointed at and talked about. Equity involves fairness, appropriateness, reasonableness, rightness. To consider our actions equitable, we must consider them to be fair.

Equity as Equality

One important equity concept is that services should be distributed equally. Equal distribution has several meanings. These meanings have three dimensions. One dimension involves units of analysis. The second involves the range of permissible variation. The third dimension involves indicators of services.

1. Units of analysis.

One unit of analysis is the neighborhood or service district. Some services are not supplied to households. Instead, they are made available to neighborhoods or service districts. For example, a park is intended, primarily, to serve residents for some distance on all sides. Neighborhoods can be compared with each other in terms of the adequacy of these services. Households within each neighborhood, however, will be varying distances from each park. The meaning of equal service distribution for parks is that each neighborhood has the same number of acres of parkland for every 1,000 residents.

2. Range of permissible variation.

Equal service distribution may refer to precise equality or to differences within a range of permissible variation. It is unlikely that each neighborhood will have exactly 10 acres of parkland for each 1,000 residents. Instead, an equal distribution of parkland may mean that the differences among neighborhoods are limited— are within some permissible range of variation. An extension of this notion is that each neighborhood should be served at least at some minimum acceptable standard. For example, perhaps local public officials have set a goal of serving each neighborhood with at least 8 acres of parkland for each 1,000 residents. These officials may think of neighborhoods as having equal parkland, once this standard is reached, even though some neighborhoods may have far more than the amount called for by the minimum standard. Under this notion of equal service distribution what is meant is that a minimum standard is reached or exceeded, not that services really are equal.

3. Indicators of services.

Equal service distribution is meaningful only in the context of indicators for measuring services. Services cannot be compared for equality in the abstract. Indicators must be selected. Chapter 3 is devoted to the presentation of a framework for analyzing service distribution. In that chapter, three categories of indicators are relied upon— indicators of resources, activities, and results.

Equal service distribution could mean:

a. Equal acres of neighborhood parks/1,000 residents (resource indicator)

b. Equal minutes of operation of facilities/resident (activity indicator)

c. Equal attendance per 100 hours of operation (by type of facility)/ 1,000 residents (result indicator)

At this point, it is not important to understand fully the distinction between indicators of resources, activities, and results. We emphasize that the notion of equal service distribution is meaningful only in the context of specific indicators of service distribution. Because indicators measure different important aspects of service distribution, it is essential to use a multiple indicators approach to service distribution analysis.

Inconsistency Between Equality and Other Equity Concepts

The concept that equity requires equality is not easily reconciled with the concepts that equity should be based on need, demand, preference, or willingness-to-pay. To discuss these inconsistencies, each of these alternative equity concepts must be defined and briefly explained.

Need

Equity based on need assumes that some people have a greater need for public services than do other people and that these greater needs should influence the distribution of public services. How differing needs are identified is one complication with this equity concept. If needs vary and if services vary to some degree in relation to needs, then by definition services cannot be distributed equally.

Demand

Equity based on demand means that public service distribution should be influenced by the explicit demands that people make for services. Demands can be expressed in several ways. Use of facilities registers demand. Requests for services express demands. Complaints about services manifest demands. Equality is not consistent with demand-based equity, unless demands are equally distributed. Variation can be accommodated through the range of permissible variation and through the minimum standards aspect of service distribution. All neighborhoods could be provided with services that meet a minimum standard. Services in excess of this minimum standard could be provided on the basis of demand.

Preference

Another equity concept is that services should be based on preferences. Preferences include expressed and unexpressed wishes. An unexpressed wish still can be a preference. People may feel like requesting or complaining without doing so. They may want to use public services but are deterred by lack of money or accessibility. They may want to use a park but fear for their safety. It seems probable a) that not all people in one neighborhood want the same package and level of services, and b) that not all neighborhoods want the same package or level of services. Thus, equality and preference as equity are difficult to reconcile. Unless all preferences are expressed as demands, then the preference and demand concepts of equity also are inconsistent. Preferences also may not match needs.

Willingness-to-Pay

Willingness-to-pay measures both the presence and intensity of demand. It requires that preferences be expressed and that the expression of preferences be weighed in the crucible of how much services cost. Intensity is taken into account because expenditures made once cannot be made for other goods or services. Thus, some argue that preferences and demands are most realistically represented when they are expressed through willingness-to-pay for specific services. Equity, in this view, should be based on the willingness of consumers of services to pay for them.

Willingness-to-pay, however, is related to ability-to-pay. Since ability-to-pay is not equally distributed, willingness-to-pay is not likely to be equally distributed either. Therefore, this equity concept is inconsistent with equity as equality. Ability-to-pay may also be diametrically opposed to equity based on need.

Judgments about equity require judgments about values. Choices must be made. Among these choices are the conceptions of equity that seem most appropriate. One could approach the subject by choosing one conception of equity and trying to fit it to every circumstance. We believe that the role of local public officials is too complex to make such a simple, all-purpose choice work effectively as a guide to decision-making. Rather, public officials will do better by balancing these conceptions of equity to fit the circumstances.

Equity Concepts Applied to Neighborhood Parks

Neighborhood parks are modest in size, a few acres generally, with a playground and playfield, and great variety beyond that in the facilities that may be available. Equity as equality could be interpreted as requiring that every neighborhood have an equal number (or some small deviation from a standard) of acres of neighborhood parkland per 1,000 people within no more than some maximum distance, say one-half mile, of all residents. Such a concept is not consistent with equity based on need, unless the residents of every neighborhood are equally in need of neighborhood park services. Discerning need is difficult. To operationalize the concept, need must be inferred from some condition. But it is reasonable to surmise that poor people have greater need for neighborhood park services than do other people because they tend to have less private recreation space of their own, they have less money with which to purchase recreation, and they have less access to transportation with which to travel to alternative recreation areas. Still, need interpreted this way is based on supposition. It assumes that need will be manifested in demand. But demand may be independent of need if need is measured in terms of income. Demand manifested in high rates of use, in requests for service, and in complaints about service may not vary according to income characteristics of residents. Furthermore, preferences may not be translated into demands.

The Importance of Discretion

One factor is common to park services and complicates equity judgments about them. Parks provide discretionary services. Because parks serve leisure time, use of parks is discretionary on the part of citizens. Different people have different preferences. Preferences vary by age, by physical agility, by social up-bringing. An individual's tastes may vary over time. Variable citizen preferences and discretionary use make the objectives of park services more nebulous than the objectives of some other services. The discretion of citizens increases the discretion that government officials responsible for park services have as well.

Applying Equity Concepts

In making decisions, how can equity concepts be applied? At the analytical stage, two steps should be taken:

1. What advantages and disadvantages does each equity concept have if applied to a service?

2. For each aspect of the service, which equity concept seems most appropriate?

The main questions to ask in determining advantages and disadvantages include these:

First, who will benefit if the concept is used?

Second, will there be spillover effects? That is, will residents, immediate neighbors and/or the residents of other neighborhoods be affected if an equity concept is applied to parks within the neighborhood?

Third, is it administratively practical (cost effective and politically reasonable) to apply the concept?

Applying Equity Concepts to Decisions about Neighborhood Parks

What are the advantages and disadvantages of applying the five equity concepts (equality, need, demand, preference, and willingness-to-pay) to neighborhood park services?

First, who will benefit? Equity based on need, assuming need to be a function of income and wealth, tends most toward the redistribution of resources to benefit poor people. Since poorer people have less private open space, less interior play space, fewer funds to purchase private recreation, and less mobility to travel to recreation outside the neighborhood, a need basis for distributing neighborhood parks would provide poor neighborhoods with more parkland and facilities than other neighborhoods would receive. Willingness-to-pay, because of its relation to ability-to-pay, tends most toward inegalitarianism, those who already have the most private resources being most favored in gaining access to public park services.

Equity as equality rests in the middle. It leaves the distribution of benefits undisturbed. The effect of demand and preference criteria of equity depend on empirical conditions— what people want and what they do. The tendency is for middle and upper-income neighborhoods to be better organized than low-income neighborhoods to seek government services. The demand pattern that exists in a given place for parks, however, may deviate from this pattern.

Second, will there be spillover effects if the concept is applied? Spillover effects from park services are likely to occur primarily because unoccupied youths engage in activities that others dislike. Thus, willingness-to-pay, by reducing park access to low-income youths, if applied widely could have spillover effects. Whether these effects occur, what triggers them, and how serious they are, however, is highly speculative. The most reasonable perspective probably is to assume that spillover effects from applying any of the equity concepts would be slight, with the possible exception of willingness-to-pay, if it was applied widely (basketball courts, ballfields, and so on).

Third, is it administratively practical (cost effective and politically reasonable) to apply the concept? Both equality and need concepts of equity may be costly to apply. Sometimes low-income neighborhoods are deprived partly because they are developed, land is expensive, and land for parks was not donated or acquired fast enough historically to meet current requirements, using equality and need criteria. This consideration applies to park land acquisition, but not substantially to facilities and programs. Demand is practical to use because it gives priority to areas that seek services and provides less to those whose residents seem less concerned. Preference is difficult to discern, and hence, its utility is limited to situations where current preferences may be a guide to future use, such as when decisions are made about what facilities to include in a new park. Willingness-to-pay can be used for park acquisition in developing areas, if the cost can be included by developers in the purchase price of residences, or if residents are organized to tax themselves. Willingness-to-pay also can be used for specialized facilities, for which the interest of most people is low but the interest of a few people is intense.

One important equity issue concerns the intermingling of accessibility and price. How close should which park services be to which people and at what price should services be made available?

How should this general issue be interpreted for the varied services offered by parks? There are several distinctions which seem helpful.

1. Facilities that serve many purposes and potentially serve much of the service area population should tend to be equally distributed or skewed toward need. Examples would be neighborhood parks and recreation centers. They should be free to users.

Charging general purpose costs to the general fund seems appropriate. Besides, monitoring and charging for general park use is costly to administer. Facilities that serve one purpose can with greater justification be unequally distributed, because they are few in number. Officials reasonably may charge for their use, perhaps sufficient to pay the full cost of providing them, since those who want to use them are but a small portion of the total taxpayers of the jurisdiction. The argument for general services, like recreation centers and neighborhood parks, being skewed toward need is made stronger by the probability that regional parks, as well as public state and federal parks, will tend to be more remote and therefore more accessible to people with more income. Equality of access to the sum of park services may require that certain services, such as neighborhood parks and recreation centers, be located to favor lower income neighborhoods.

2, There are legitimate roles for demands to be expressed and for preferences to be elicited.

a. Acquisition of park land. Consideration of the appropriate distribution of parks, recognition of natural land features, and issues of cost should dominate land acquisition decisions. However, there is a role for the views of residents. For example, how do residents expect that a particular site will affect noise and traffic in the neighborhood, and how accessible to them do they believe the site will be?

b. Long-range facilities planning. Although many aspects of parks planning benefit from professional training and judgment, ultimately the issue is: Who will use the park and what will they do? One useful place to begin is by asking people what they want, or, which, among a set of feasible alternatives, do they prefer. What facilities do they want? What equipment? What facilities should be developed first? Where should they be? An example of a questionnaire used for this purpose in Fairfax County, Virginia, can be found in Appendix A.

c. Annual programming. Determination of what team sports to organize, what activities to offer, what courses to provide, is facilitated most by examining use, by considering demands expressed through participation in the current year and in preceding years. By looking at earlier years, trends can be observed. Current and past use is not the only important consideration. Since use is confined to opportunities currently available, attempts also should be made to determine the interest of citizens in programs not presently offered.

A Summary of Equity Considerations

Equity considerations in providing park services can be summarized in this way:

There are reasonable arguments for favoring low income nieghborhoods based on both need and equality concepts in providing general services.

Willingness-to-pay has an increasingly important claim as services become more specialized, serving small segments of the population.

Demand and preference each have a role in issues of land acquisition, long-range planning of facilities, and annual programming.

Decision Rules

Decision rules are the policies and procedures which administrators use to guide their actions. Their purpose is to simplify complexity, to provide rules by which to resolve recurring issues. Instead of dealing with each problem ad hoc, on a case-by-case basis, decision rules are intended to provide predictable routines. The tendency for decision rules to be rigid presumably varies from place to place, and, we surmise, from service to service. Since little research has been conducted on decision rules in local governments, our statements here tend to be hypotheses, beliefs rather than facts.[1] We believe that decision rules will be less rigidly applied to park services than to some other services. The reason is that discretionary, and occasional, use of park services by citizens increases the discretion of park administrators, reducing the importance of simplicity and predictability.

What happens when something new is done? The development of a new park requires decisions about location, size, type, facilities, equipment, and activities. Park administrators have searched for ways to routinize some of these decisions. Their search has led them to standards to which a community should aspire. Attempting to serve this need of local professionals, the National Recreation and Park Association (NRPA) and its predecessors, has published recommended standards for communities for a variety of park types and facilities.[3] Publication of standards always is accompanied by disclaimers that they should be adapted to local circumstances. Two local circumstances of note are what people want and what they are willing to pay. The mechanisms for determining answers to these basic questions are not well oiled. Park administrators are likely to be thrown on their own ingenuity more than is comforting to them. Hence, their tendency is to find solace in standards recommended by a professional organization. These standards often are used in preparing community master plans and capital programs.

National standards, like any decision rules, incorporate one or more conceptions of equity. NRPA standards assume implicitly that equality of access per capita is the appropriate basis for equity judgments.

NRPA Standards

The National Recreation and Park Association (NRPA) suggests the following uses for its standards:

"The development of a comprehensive plan of park and recreation areas and a systematic approach to land acquisition.

"The determination of what and how many recreation facilities are needed to best serve the people, and where they should be provided.

"The justification to political bodies for the acquisition and development of park and recreation land and facilities and to determine priorities.

"Use as a measure against which the effectiveness of the park and recreation system can be evaluated."[4]

The NRPA standards that most concern us here are those for parks and special facilities, facilities which often will be within parks. These standards include recommendations for acreage per 1,000 persons, a size range by type of park, the number of people to be served by park and facility type, and the maximum distance that residences should be from each type of park. The standards are reproduced in Tables 1 and 2.

Table 1. Standards Recommended by the National Recreation and Park Association

BY CLASSIFICATION AND POPULATION RATIO

Classification	Acres/ 1000 People	Size Range	Population Served	Service Area
Playlots	*	2,500 sq. ft. to 1 acre	500-2,500	Sub-neighborhood
Vest pocket parks	*	2,500 sq. ft. to 1 acre	500-2,500	Sub-neighborhood
Neighborhood parks	2.5	Min. 5 acres up to 20 acres	2,000-10,000	1/4 - 1/2 mile
District parks	2.5	20-100 acres	10,000-50,000	1/2 - 3 miles
Large urban parks	5.0	100+ acres	One for ea. 50,000	Within 1/2 hr. driving time
Regional parks	20.0	250+ acres	Serves entire population in smaller communities - should be distributed throughout larger metro areas	Within 1 hr. driving time
Special Areas & Facilities	*	Includes parkways, beaches, plazas, historical sites, flood plains, downtown malls, and small parks, tree lawns, etc. No standard is applicable.		

*Not applicable

By Percentage of Area

The National Recreation and Park Association recommends that a minimum of 25% of new towns, planned unit developments, and large subdivisions be devoted to park and recreation lands and open space.

Source: National Park, Recreation, and Open Space Standards, (Washington, D.C.: National Recreation and Park Association, June 1971).

Table 2. Standards Recommended by the National Recreation and Park Association

STANDARDS FOR SPECIAL FACILITIES

The following standards for recommended for individual recreation facilities:

Facility (outdoor)	Standard/1000 people	Comment
Baseball Diamonds	1 per 6,000	Regulation 90
Softball Diamonds (and/or youth diamonds)	1 per 3,000	
Tennis Courts	1 per 2,000	(Best in battery of 4)
Basketball Courts	1 per 500	
Swimming Pools-25 yard Swimming Pools-50 meter	1 per 10,000 1 per 20,000	Based on 15 sq. ft. of water for 3% of pop.
Skating Rinks (artificial)	1 per 30,000	
Neighborhood Centers	1 per 10,000	
Community Centers	1 per 25,000	
Outdoor Theaters (non-commercial)	1 per 20,000	
Shooting Ranges	1 per 50,000	Complete complex incl. high power, small-bore, trap and skeet, field archery, etc.
Golf Courses (18 hole)	1 per 25,000	

Note: Most of the above mentioned facilities are desirable in small communities, even though their population may actually be less than the standard. Every effort should be made to light all facilities for night use, thus extending their utility.

Source: National Park, Recreation, and Open Space Standards, (Washington, D.C.: National Recreation and Park Association, June 1971).

Table 3. Park and Recreation Standards - Baltimore, Maryland

Facility	Service Distance	Population Served (in thousands)	Acres/ 1000 Pop.
Neighborhood Recreation Complex Playground--play area and paved game courts Playfield--sportsfield and parking area Recreation Center Building--building, playlot, senior citizen and crafts area Passive--picnicking and park area	1/4 to 1/2 mile[1]	8-12	1.0
Community Recreation Complex Community Center Building, playlot, play area, paved game courts, sportsfield, swimming pool, skating-dancing circle, special events area, senior citizens, passive park and picknicking, and parking	1 mile	varies	.5 to 1.0
City-Wide Recreation and Parks Recreation park, amusement center (zoo, aquarium, etc.), sports center, Parks and Recreation Administration Center	5 miles	varies	5.0

[1] Service radius varies according to population density as follows:

49 persons/acre or less	1/2 mile (playfields--1 mile)
50 persons/acre or more	1/4 mile (playfields--1/2 mile)

The above chart indicates a summary of proposed standards with the suggested components for each type of recreation complex. At the neighborhood level, the individual components which comprise each major element, i.e., playground, playfield, recreation center building and passive area, are shown.

Source: National Park, Recreation, and Open Space Standards, (Washington, D.C.: National Recreation and Park Association, June 1971).

Table 4. Standards for Open Space and Recreation Areas--Dade County, Florida

Area	Spatial Standards (Acres per 1,000 Resident Population)	Site Size Standards (Acres)	Service Area Radius (Miles)
Sub-Metropolitan			
Mini-Park		1 or less	0.25
Neighborhood Park	1.25	5[1]	0.5
Community Park	1.50	20[2]	3.0
Other Areas	1.75		
Total	4.50		
Metropolitan			
Metropolitan Park		500[3]	

[1] Minimum--2 additional acres for passive activity desirable.

[2] Minimum--10 additional acres for passive activity desirable.

[3] Minimum.

Source: National Park, Recreation, and Open Space Standards, (Washington, D.C.: National Recreation and Park Association, June 1971).

NRPA Standards and Equity Concepts

Essentially these standards reflect an equality concept of equity. Equality is to be achieved by having the recommended number of park acres per 1,000 persons. This will require more park land per square mile in densely populated neighborhoods in order to achieve the recommended areage per 1,000 persons. In sparsely populated neighborhoods, it will be difficult to meet the recommendation that neighborhood parks be within 1/2 mile, or less, of residents, without substantially exceeding the recommended number of acres per 1,000 persons. Thus, the combination of acreage and distance standards may provide more park services for sparsely populated neighborhoods, which will tend to be middle and upper income neighborhoods. However, all neighborhoods are recommended to meet or surpass minimum standards. The recommendations for special facilities, in Table 2, are framed in terms of one facility for a certain number of people, ranging from 1 per 500 for basketball courts to 1 per 50,000 for shooting ranges. Although distance recommendations are omitted, it is reasonable to assume that a generally equal distribution among neighborhoods in the community is intended.

Communities frequently modify the NRPA recommended standards. The modifications, however, seem to incorporate the basic elements of the NRPA recommendations— so many acres per 1,000 persons within some specified distance of all residents. The examples for Baltimore, Md., and Dade County (Miami), Fla., in Tables 3 and 4, illustrate these modifications.

Calculations of park acreage may be complicated by similar services being available at facilities neither classified as parks nor under the control of the parks department. Public schools and facilities serving private developments also provide recreation services similar to some of those available in public parks. Sizeable acreage and large numbers of facilities may be provided in these ways, especially in suburbs. Fairfax County, Va., has developed the following method for calculating whether its local standard of 8.5 acres of community-serving park land has been met:

> "All land in public community parks.
>
> Twenty-five acres of selected (large) county parks and district parks.
>
> One-half of the grounds of existing elementary schools.
>
> No more than ten acres or half the land area of existing intermediate and high schools, or 20 acres of developed secondary school sites.
>
> No more than one-half the total of the community-serving parkland in an area of a rezoning can be composed of school land.
>
> While each acre of developed private recreation land will be credited as providing community park services, the acreage is only applied to the population of the development which the private facilities support."[5]

We should note here that nothing is said in these standards about varying their applicability because of interpretations of need, demand, preference, or willingness-to-pay. The basic concept manifested in these standards is equality as measured by the input of resources. It also is worth noting that many recreation activities are not tied to neighborhood parks. Programs, courses, and leagues usually are concentrated at one place or a few places. If free transportation is provided, inadequacies in park facilities in certain neighborhoods can be alleviated.

Park Administrators Advocate Equality

Equality in parks distribution also seems to be the standard most often espoused by park administrators. In Atlanta, Parks Director Theodore Mastroianni said that the aim there is equality in all neighborhoods.[6] In Fairfax County, Parks Director Joseph Downs siad: "Low income neighborhoods get equal treatment. We don't do more there."[7] An attempt is made to bring areas deficient in park acreage up to the county's standard. In Charlottesville, Va., the norm was equal treatment. To the Richmond Parks Director, equity meant "equal access for all residents."[8] In Houston and Detroit, the park administrators' equity standard was equal treatment for all neighborhoods.[9]

In the real world, as one might expect, distribution decisions are not so simple. For one thing, there is history to contend with. Parks Director Mastroianni in Atlanta said: "Atlanta had a history of unequal parks distribution. White areas had good parks, black areas did not. When I came two years ago, I tried to reverse the priorities. So we started putting a lot of money into existing parks in black neighborhoods." Inner city areas, including those parts in which well-to-do residents lived, often have lacked parks historically. As time passed, low income residents frequently came to inhabit these areas. What was once an irritation to well-off residents who had recreational alternatives, can become a serious problem to low income residents as neighborhood succession occurs. History also has an effect through the donation of land for parks. Public benefactors gave land where they had it. Distributional considerations were significant neither in the giving nor the receiving of gifts of parkland. Hence, in many places, park distribution is skewed by dint of benefaction, and administrators must decide at what price any maldistribution merits correction. Developing parks in already developed areas is no simple matter. The cost can be staggering and be carried out only at the additional cost of relocation. Furthermore, some administrators contend that residents of developed neighborhoods may not want new parks. In Atlanta, Parks Director Mastroianni believes this to be the case: "It is difficult to locate a park in an existing neighborhood. People fear others will come in from outside and use it. People feel they are being encroached upon. They expect more cars, vandalism, and noise." Hence, the strategy in Atlanta is to put more facilities and equipment in existing parks to equalize facilities and equipment distribution, while investing in regional parks nearby.

In Fairfax County, Parks Director Downs said that residents of developed neighborhoods do want more parks. One aim of the parks department is to bring each area up to minimum standards. However, the organization of local government affects the decision rules. Parks in Fairfax are run by a Park Board Authority, eight of whose members represent legislative districts and are appointed by their legislators, with only two additional members named at-large. Within each legislative district, the norm is to locate new parks in areas below minimum standards. But a second rule is to provide approximately equal amounts of capital funding for each legislative district, regardless of the relative need among districts. This is done both to get votes for capital construction from Park Board Authority members, and also to get votes from the general public, whose members vote on park development through their votes on parks bond issues.

Demands (requests, complaints) also are important. Fairfax County Parks Director Downs said requests were more important than any other single factor, including the standard of equality, in influencing park location decisions. In Atlanta, demands were noteworthy for dissuading administrators from proposing park developments in existing neighborhoods. In Charlottesville, requests for facilities, including new parks, are given heavy consideration. Conversely, in the absence of neighborhood requests Charlottesville's Parks Director was reluctant to propose park development to equalize park distribution. This reluctance had three origins. The first is the memory of trying to locate a park in a neighborhood, some of whose residents denounced the attempt, marshalling neighborhood opinion against the proposal. The second is that there is a surplus of requests for facilities and parks. The third is a belief that it is appropriate for government administrators to respond to what people want.

Finally, some park development occurs where there are few residents. Administrators in Atlanta and Fairfax were advocating park development in undeveloped areas because some lands had outstanding topographic characteristics for parks and because residential development was anticipated nearby. During the development phase, then, these areas will tend to have more park acreage per 1,000 persons than other areas.

Decision Rules for the Location of New Parks

We asked park administrators in eight cities and one urban county to rank the following decision rules that could be used to determine the location of new parks:

(1) A maximum distance standard is one important factor in determining new park locations. New parks will be located to maximize the reduction in the number of residences greater than this specified distance from the nearest neighborhood park.

(2) An acreage and density factor is used to decide the location of new neighborhood parks. A standard of X acres per 1,000 residents is used. Neighborhoods are ranked from most to least deficient in park acreage and the most deficient neighborhood receives first priority.

(3) Low-income neighborhoods are given priority, because residents of these neighborhoods have a greater need for public recreation.

(4) Neighborhoods with high rates of use of existing parks are given extra consideration.

(5) Citizen requests are important. If residents have been vocal, their neighborhood may be given favorable consideration even if the area has sufficient park acreage based on other criteria.

(6) Sparsely populated parts of the jurisdiction often are given priority when decisions about park location are made. This occurs because these are often areas of future growth and land suitable for parks can be purchased at more reasonable prices than elsewhere.

Table 1. Locating New Neighborhood Parks

A ranking by park administrators of the factors that influence neighborhood park location decisions.

	Distance	Density	Income	Use	Requests	Sparsely	Council	Donated	Other
	1	2	3	4	5	6	7	8	9
Atlanta	1				2	4	5	3	
Boston			4		1		3	2	
Charlotte	1	2	3		5			6	4
Cleveland			4	3	2	6	1	5	
Fairfax	4	2			1		5	3	
Hartford	3	1		2	6				4,5
Pittsburgh	3	2	5	6	1		4		
Richmond	2	1			3	5		4	
Rochester	1	2			3		4		5

Key: 1. Maximum distance standard 2. Acreage and density 3. Income 4. Use 5. Requests 6. Sparsely population parts 7. Council prefers balance 8. Land donated 9. Other

(7) Geographic balance is important in proposing locations for new neighborhood parks. The council, or board, that must approve development of new parks prefers that proposed new parks be distributed around the jurisdiction, even to parts of the jurisdiction that are not deficient in park acreage based on other criteria.

(8) The decision where to locate a new neighborhood park is often beyond the control of the parks department. Parks often are located on land that has been donated to the city. In other cases, land suitable for a public park is not available in some parts of the jurisdiction.

These rules usually will be considered in the preparation of a comprehensive plan for the community and in preparing a capital program. In Table 1, the rules used to determine the location of new parks in the jurisdictions studied are listed, as reported by park administrators in each jurisdiction.[10]

The most important rules for locating new parks in the communities studied are the maximum distance, acreage and density, and citizen request rules. Citizen requests are the most important factor in park location in Boston, Fairfax, and Pittsburgh, and are second most important in Cleveland. Maximum distance ranks first in Atlanta, Charlotte, and Rochester, and second in Richmond. The acreage and density rule ranks first in Hartford and Richmond and second in four cities. The citizen requests rule is based on demand as equity. The maximum distance and acreage and density rules incorporate equality as equity.

Availability of land suitable for the location of a new park is also a consideration in several cities. The Director of Parks and Recreation in Richmond noted that areas of high density which "need" parks often don't have available space. Parks administrators in Charlotte mentioned that some sites that qualify on the basis of criteria such as maximum distance on acreage and density are not suitable because barriers (freeways, railroad tracks) inhibit access. There is another factor that affects park location. Until 1969, 98 percent of parkland in Charlotte was donated to the city. Availability of land was cited as a consideration in decisions about where to locate new parks in six of the nine jurisdictions studies.

It is significant that low-income neighborhoods do not receive priority in decisions about where to locate new parks. Need as equity plays no role in the distributional process in four of the nine jurisdictions. In Charlotte, the low-income rule ranks third, in Boston and Cleveland it ranks fourth, and in Pittsburgh it ranks fifth.

It is useful to be explicit about the decision rules that are employed in parks decision-making. The process of identifying the decision rules can be initiated by the parks administrator, by a mayor or city manager, by council members, or perhaps by the budget director or planning director. Narrative statements about decision rules that are used, the reasons for the rules, and how these decision rules are related to conceptions of equity are needed. Decision rules should be identified for subjects, such as, what is the basis on which:

1. Funds are distributed for facilities and equipment in existing parks?

2. Programs are distributed to playgrounds and recreation centers, especially summer and after school playgrounds.

3. Park maintenance efforts are distributed?

Park Location Decision Rules: Summary

Equal treatment in location of parks and facilities is the decision rule most often espoused by parks administrators.

The parks administrators interviewed do not argue that poor neighborhoods should get favored treatment because of greater need or use.

In practice, the rule of equality is deviated from on several counts. One deviation occurs because of history, often from benefactors' gifts. A second deviation may occur because log-rolling among decision-makers perpetuates the distribution pattern that history has presented. A third deviation may occur because citizen requests are relied upon and requests are not evenly distributed. Fourth, planning for the future sometimes leads to acquisition of prime park land in undeveloped areas, anticipating future needs.

Each of these deviations constitutes a decision rule. If land is offered for a public park, accept it. If government structure makes it politically convenient to distribute current resources equally, rather than to correct inequalities inherited from the past, then accept the rule of current equality and sacrifice the objective of cumulative equality. Give priority to citizen demands; deviate from equity as equality to be responsive. Adopt subdivision rules that require developers to meet current community standards for park acreage per 1,000 residents, but do not impose such rules retroactively on property owners in areas developed a short time, or a long time, before current standards were imposed.

The important point to note is that equity concepts are implemented by decision rules. Advocacy of an equity standard is an empty dream, unless it is backed up with decision rules to make it real.

Appendix A

FAIRFAX COUNTY, VA., PARK AUTHORITY
FLAG RUN PARK QUESTIONNAIRE

The Fairfax County Park Authority is about to begin planning for the future development of the Flag Run Park, a nine (9) acre site. The site is bounded by Route 495 and North Springfield Subdivision. It is a stream valley with a small portion of open field.

As a potential user of this park, we are interested in your ideas on how it can be developed to provide the type of recreational experience you and your community desire.

All suggestions will be considered in planning the park and a public hearing will be held before the final adoption of the master plan by the Park Authority.

1. Your name and address ____

2. Number of persons in family and their ages
____/ ____/ ____/ ____/ ____/ ____/ ____/ ____/

3. Which of the following facilities would be desirable in this park and be most used by you and your family?

	Yes	No
Tennis Courts	___	___
No Development	___	___
Apparatus Area (children 6-12)	___	___
Tot Lot (pre-school)	___	___
Picnic Area	___	___
Nature Area	___	___
Open Play Field	___	___
Horseshoe and Shuffleboard Courts	___	___
Multi-use Court	___	___

4. Which facilities would you like to see developed first? Include any that were not mentioned in the above list.

____

____

5. Should development be toward a passive area with walkways, benches, grass areas, trees and shrubs? Yes___ No ___

FOOTNOTES

1. See Chapter 3 of William H. Lucy and Kenneth R. Mladenka, Equity and Urban Service Distribution, (Washington, D.C.: National Training and Development Service, 1978), for a discussion of theory and findings about decision rules; and see Frank S. Levy, Arnold J. Meltsner, and Aaron Wildavsky, Urban Outcomes, (Berkeley: University of California Press, 1974), for an analysis of the use of decision rules in providing local education, street, and library services in Oakland, Calif.

2. Interview conducted June 30, 1976.

3. Robert D. Buechner, ed., National Park, Recreation, and Open Space Standards, (Washington, D.C.: National Recreation and Park Association, June 1971). Earlier reports on standards are cited on page 48.

4. Ibid., pp. 7-8.

5. Preliminary version of "A Summary of the Standards and Criteria Used for the Planning of Public Facilities in Fairfax County, Virginia," Public Facilities Branch, Office of Comprehensive Planning, Fairfax County, Virginia, May 1977, pp. B-5 and B-6.

6. Interview conducted March 29, 1977.

7. Interview conducted April 12, 1977.

8. Interview conducted June 17, 1977.

9. Kenneth R. Mladenka and K. Q. Hill, "The Distribution of Urban Public Services: Parks and Libraries in Houston," Urban Affairs Quarterly, Forthcoming; and Bryan D. Jones, S. R. Greenberg, Clifford Kaufman, and J. Drew, "Bureaucratic Response to Citizen Initiated Contacts: Environmental Enforcement in Detroit," American Political Science Review, forthcoming.

10. These rankings of decision rules are based on the judgments of park department administrators, usually the judgments of the department head. The rankings do not reflect a formula used by administrators to make park location decisions. These decisions are more ad hoc than a ranking of decision rules may suggest. The ranking judgments by administrators reflect their attempt to reflect on the decision process they tend to follow and to interpret the pattern, retrospectively, as tending to follow the ranking of decision rule influences reported here.

CHAPTER 3. METHODOLOGY

FOR ANALYZING URBAN SERVICE DISTRIBUTION

The purpose of this chapter is to present a framework for analyzing urban service distribution. Service analysis should be related to the objectives of each service. The indicators used in analysis also should be related to conceptions of equity, giving these conceptions of equity operational meaning that administrators, other local officials, and citizens can use in judging whether service distribution is appropriate. An essential aspect of the service analysis framework is that it stresses the use of multiple indicators of service characteristics. Single indicators are not adequate to describe any service. A set of indicators always should be selected.

Categories of Analysis

The first problem that an analyst confronts is how to measure services. Indicators must be selected. These indicators should be related to the objectives that the service is intended to meet. Services have more than one objective. For example, the objectives of park services can be described as being to provide a variety of leisure activities for all citizens which are enjoyable, accessible, aesthetically appealing, and safe. Indicators that are relevant to measuring enjoyment may not adequately measure accessibility and accessibility indicators will not adequately measure safety. Thus, a number of indicators will be needed to cover all the objectives.

Each service has one or more social conditions to which it is applied. Some of these conditions should be referred to in the statement of service objectives. With the social condition leisure time, the need to provide places and activities to deal with the condition and the most desirable means of doing so is not as clear as with some other services. The fact that use of park services is discretionary complicates the measurement of service adequacy, making the analysis of service effectiveness a more subjective process than with many other services.

A service delivery framework should be used to help identify specific indicators for each service. The framework proposed here has several uses. It directs attention to several stages of the service process. It forces the analyst to consider the consequences of the service. It stresses performance, in addition to encompassing workload measures.

For every urban service, resources are required. In systems model terms, resources commonly are referred to as inputs. The service delivery framework is diagrammed in Figure 1. Examples of types of service indicators are shown in Table 1. Resources are money, personnel, facilities,

Figure 1. Service Analysis Framework

Each service has objectives

involving

Serving population and influencing social conditions

by using

Resources

(Expenditures, personnel, facilities, equipment)

and engaging in

Activities

(time frequency and duration)

having

Results

(direct consequences--intended and unintended--
and especially use of services--amount, rate,
and reasons)

and leading to

Impacts

(changes in social conditions)

Table 1. Examples of Service Indicators

Data for specific indicators and impacts of resources, activities, results are obtained by gathering field data about services and facilities and by conducting surveys of citizens.

Resources	Expenditures ($ per 1,000 persons or 100 households, such as neighborhood park expenditures per 1,000 persons)
	Personnel (number of parks personnel per 1,000 population)
	Equipment (playground swings per 100 children 12 and under)
	Facilities (neighborhood park acres per 1,000 residents)
Activities	Frequency (hours swimming pools are open per week)
	Duration (not important for park services)
Results	Intended consequences (resident satisfaction with park services)
	Unintended consequences (complaints about harrassment in neighborhood parks)
	Use of services by amount (number of swimmers per day, number of park users per week)
	Use of services by rate (number of swimmers per 1,000 persons)
	Use of services by reasons (percentage of persons not using a park because of anxiety about their personal safety when using the park)
Impacts	Changes in social conditions (partially identifiable using experimentation or elaborate and complex calculations)

and equipment. A useful measure of resources often is expenditures—expenditures for playground personnel, for park maintenance, for special programs. In the case of parks, indicators of facilities will be especially important. How many acres of playgrounds and parkland per 1,000 persons are available? How many tennis courts, how many ballfields, how many swimming pools, how many swings and slides are available?

The activities of the urban service system are the ways in which the resources are used. Citizens swim, play baseball, and picnic. Activities are sometimes referred to as processes in systems model terms. Activities are more difficult to measure than are resources. They involve motion, change, action. They do not stand still. There is no evident way to measure the activity of giving instruction in arts and crafts, or swimming lessons, or playing baseball. Analysts of parks services are likely to be able to go no farther than to measure frequency and duration, e.g. how many hours are swimming pools open each week, how many hours per week are there of supervised playground recreation.

Results are what happens as a direct consequence of activities of the service delivery system. Result indicators are essential in measuring the extent to which service objectives are being achieved. How many people have used the swimming pool? How many people believe the parks are satisfactory in size, location, facilities, maintenance, and safety? These measure results of the service. It is important to note that results are not always intended. Objectives usually are not achieved completely. With discretionary services like parks, use of facilities may be low due to inadequate size, location, facilities, maintenance, and safety. Analysts should try to include indicators of unintended, as well as of intended, consequences.

Surveys of citizens may be used to obtain information about the results of services. Opinions may be the best information available about some results of services. Data on park usage in non-supervised open areas usually will not be gathered by park personnel. People can be asked how often they use particular parks. They also can be asked whether they know of the existence of certain facilities or programs in parks. The rate at which people use parks may be influenced by whether they feel safe when using the park. Their responses will help identify reasons for use and non-use of facilities and programs.

The impact of a service can be defined as the difference between results given the existence of the service and the conditions that would exist in the absence of the service. This difference is very difficult to identify. It is apparent when one talks about the contrast between the presence and absence of a service that the impact of the service probably is great, although estimating the impact accurately is difficult.

Operationalizing Conceptions of Equity

Each category of analysis— resources, activities, and results— can be used to analyze the pattern of service distribution. The service distribution pattern may vary depending upon the category of analysis, and the indicator within each category, that is used. For example, park resources, as measured by acres of community-serving parkland, might be distributed so that every neighborhood met or surpassed an accepted standard, such as five, or eight, or ten, acres per 1,000 persons. In addition to variation in park acreage above the accepted standard, there might be additional variation in activities, such as number of hours of supervised playground recreation, number of hours of swimming, and so on, whether due to variation in personnel expenditures or to variation in availability of these resources. Results might vary as well. Usage could be greater in areas having less park acreage and fewer hours of specialized services, perhaps due to persons there having fewer recreation options.

Earlier, five conceptions of equity were described briefly. These are equity based on equality, need, demand, preference, and willingness-to-pay. The categories of analysis (resources, activities, and results) described here can be used to give concrete meaning to these equity concepts. The importance of making equity concepts concrete can be illustrated with equity as equality. Equity as equality could mean that equal resources per capita should be provided. For parks, this could mean that each neighborhood should receive the same number of acres of community-serving parkland per 1,000 persons. Equity as equality also could mean that equal activities per capita should be provided. For parks, this could mean that each neighborhood should receive the same number of hours of supervised summer playground recreation per 1,000 residents. Equity as equality also could mean that equal results per capita should be provided. For parks, this could mean that persons in each neighborhood should be equally satisfied with the safety, maintenance, and facilities in their neighborhood parks.

Self-Evaluation Questions

1. What are the main components of, and the relationships within, the service delivery framework suggested for guiding the selection of indicators?

2. Define service resources, activities, and results.

3. What is the definition of service impacts? Why are impact indicators difficult to identify and use?

4. How are categories of indicators related to conceptions of equity? Cite some examples for equity as equality.

CHAPTER 4. HOW TO ANALYZE THE DISTRIBUTION OF PARKS

The purpose of analyzing the distribution of parks is to assist local public officials in making judgments about the equity of parks distribution. Equity judgments involve opinions about values and opinions about facts. In this chapter, we are concerned with facts. How, specifically, should parks distribution be described? What are the important indicators? It is essential to think about the objectives of park services. It is essential to consider the utility of multiple indicators, gathering data for indicators of resources, activities, and results. It is essential to focus on what is most important. And it is essential to settle on indicators that are manageable, indicators that are not too complicated nor too costly during the data gathering process.

Which indicators are practical, and which are most useful, will vary from place to place. Local officials need to make their own judgments about which indicators best fit local needs. The ones presented here are those we think most generally useful. At the end of this chapter, we suggest which of the indicators presented seem indispensable.

Indicators

To analyze the distribution of park services, indicators are needed for resources, activities, and results. Resource indicators are most important. How much of what is available to citizens is crucial, since citizens choose whether to use it or not. Here we will suggest some of the indicators that seem to us most useful. The ways of using them, the means of gathering them, and some caveats about their limitations will be presented. Some of the most important indicators for parks involve an interaction between indicators of resources and results. Expenditures, acreage, and facilities (resource indicators) are important indicators when matched with potential users— residents in the service area. They become additionally important when matched with actual users (result indicators). This interaction between indicators of resources and results will be reflected in Table 1, when indicators are listed which combine elements of both resources and results.

These indicators are suggested for use in comparing neighborhoods. The first question to be answered is: Who is getting more than others? The questions that follow are: Why? What, if anything, should be done about it? How? When? Methods of designating neighborhoods and for identifying population variables are discussed in Chapter 5. The questions concerning what should be done about service patterns one believes to be inequitable are discussed in Chapter 6 on "Change Strategies." Here we will examine the merits of, and problems with, the indicators suggested for use in analyzing park service distribution.

Table 1. Indicators for Analyzing Park Service Distribution

Objectives: Provide a variety of leisure activities for all citizens which are enjoyable, accessible, aesthetically appealing, and safe.

Indicators by measurement category	Data collection source and procedure
Resources	
Acres of neighborhood parks/ 1,000 residents	Dept. records and updated census (same for other population indicators)
Acres of community-serving parks/ 1,000 residents	Dept. records
Numbers of facilities (e.g. ball fields, tennis courts, swings, slides, and so on)/1,000 residents	Dept. records
Numbers of residents more than x miles from parks (by type) and from facilities/1,000 residents	Dept. records, draw service radius, use block data
Capital expenditures/resident	Dept. records
Operating expenditures/resident	Dept. records (requires time allocation for mobile employees and equipment)
Capital expenditures/user	Dept. records and field observations
Operating expenditures/user	Dept. records and field observations
Number of facilities (by type)/1,000 users	Dept. records and field observations
Activities	
Minutes of operation (facilities)/ resident	Dept. records
Minutes of supervised recreation/ resident	Dept. records

Minutes of programs (by type)/ resident	Dept. records
Minutes of operation (facilities)/ user	Dept. records

Results

Attendance per 100 hours of operation (by type of facility)/1,000 residents	Dept. records or field observations
Number of users of community-serving parks/1,000 residents	Field observations
Citizen rating of park services overall	Citizen survey
Citizen rating of safety, cleanliness, and maintenance by park and facility	Citizen survey

Resource Indicators

The basic standards recommended by the National Recreation and Park Association, and frequently adopted with modification by local parks departments, concern the number of park acres per 1,000 residents and the number of residents more than x miles from parks. For whatever service radius is selected for a particular type of park for a community's own circumstances, a circle should be drawn around each park. It will be obvious which areas are not within the service radius. Estimates of the number of people outside the circles should be calculated. By working from U.S. Census Bureau Block Statistics, and using updates from the planning department on population changes that have occurred, estimates that are accurate enough for this purpose can be obtained. Similarly, the population within each circle can be summed from updated census block data, to determine whether the population exceeds or is less than the amount that would equal the standard selected for number of park acres per 1,000 residents. There are advantages in treating neighborhood parks as a separate category, and then conducting a second analysis of all community-serving parks combined. For the community-serving park category, it seems appropriate to us to include schools and private facilities serving developments, using the Fairfax County approach, discussed in Chapter 2, or a variation on it.

Capital expenditures and operating expenditures also should be computed per resident. These indicators get at current park expenditures, whereas the park acreage and location indicators profile part of a community's park history. Refinements of these indicators may be useful. Young people use park services more than older people. A survey of citizens in Washington, D.C., in 1972 revealed that about 72 percent of the visits to city parks were by individuals 19 and under. The presence of residents age 0 to 19, therefore, could be used as an indicator of need. Comparisons could be made in either of two ways. First, comparisons of acreage, facilities, and expenditures could be made in terms of 1,000 (or 100) persons 19 and under. Second, comparisons could be based on actual use, so that if 72 percent of the park users in one neighborhood were 19 and under and 56 percent in another neighborhood were 19 and under, then comparisons could be made in terms of dollars spent for children in one neighborhood (assume 72 percent of total expenditures) with the amount spent in another neighborhood (assume 56 percent of total expenditures) to arrive at separate estimates of dollars spent per capita (or per 1,000 or 100 persons) for those 19 and under and also expenditures for those over 19.[1]

This refinement points toward the importance of relating facility availability to actual use. It is worthwhile to compute the relationship between capital expenditures, operating expenditures, and the number of facilities per user. In some neighborhoods use may be heavy, and in others it may be light. These data also record use by persons who do not live in the neighborhood park's service area. Neither comparisons with the total population nor with the population age 19 and under get at the relationship between expenditures and actual use of services. Use is a result of service provision. Comparisons of expenditures with use combine indicators of resources and results.

Variation in the findings that are possible using these methods is illustrated below.

Table 2. Annual Operating Expenditures by Total Population, Age, and Users

	Neighborhood 1	Neighborhood 2
Per 1,000 residents	$6,000	$6,000
Per 1,000 residents 19 and under	20,000	24,000
Per 1,000 users	2,000	4,000

What does Table 2 describe? First, the same number of dollars were spent per 1,000 residents. Second, the dollars spent for persons 19 and under varied because the percentage of the population 19 and under in the two neighborhoods differed. Third, use was much heavier in Neighborhood 1 than in Neighborhood 2 so that twice as many dollars were spent per user in Neighborhood 2 as in Neighborhood 1. One can infer that per capita equality is the standard of equity that is employed. Use reflects demand, so this pattern is not consistent with equity based on demand.

Table 2 illustrates the importance of taking results, in this case use, into account. Operating expenditures is a viable place to make adjustments. Park acreage is relatively fixed. Equipment and facilities are subject to some manipulation. Operating expenditures offer the greatest opportunities for change in response to varying use patterns. Adjustments in operating expenditures, however, may go only a short distance toward meeting needs for park services, changes in acreage and facilities generally having greater effect.

Activities

Indicators of activities are not very important for park services. The activities of maintaining, supervising, instructing, and the like, that park employees engage in cannot be measured directly. For purposes of analyzing service distribution, the most useful indicators of activities are the hours (or minutes) for which park services are available. We suggest indicators for hours of operation of facilities, hours of supervised recreation, and hours of programs. The most important of these probably are hours of operation of facilities— that is, hours that facilities are available for public use. As with resource indicators, these can be calculated for the entire population of residents, for an age group— such as those age 0 to 19, and for users of the facilities. The hours that facilities are open probably will tend to be similar throughout the jurisdiction by type of facility. However, the hours of operation in relation to population and in relation to the number of users probably will vary greatly. Hours, like operating expenditures, permit some flexibility. If some neighborhoods have heavy use during available hours of operation, additional hours can be added. Comparison of hours (or minutes) with use provides a result oriented indicator of activities. Again, a table will help illustrate the importance of comparing minutes with use, as well as with service area population.

Table 3. Weekly Minutes of Operation of Swimming Pools by Total Population, Age, and Use

	Neighborhood 1	Neighborhood 2
Per resident	0.24 (10,000)	0.24 (10,000)
Per resident 19 and under	0.96 (2,500)	0.80 (3,000)
Per user	2.40 (1,000)	1.69 (1,500)

Both neighborhoods have 10,000 residents. Both pools are open 40 hours per week, or 2,400 minutes per week. In both neighborhoods, there are 0.24 minutes of pool operation per resident per week. In Neighborhood 1, there are 2,500 residents age 19 and under. In Neighborhood 2, there are 3,000 residents age 19 and under. There is a difference, therefore, in the number of minutes of operation per resident 19 and under per week, 0.95 in Neighborhood 1 and 0.80 in Neighborhood 2. The number of users also varies, 1,000 per week in Neighborhood 1 and 1,500 per week in Neighborhood 2. The minutes of operation, then, is 2.40 per user in Neighborhood 1 and 1.60 per user in Neighborhood 2, a ratio of 3 to 2. Each measurement yields a different picture. The relevance of measuring use, as well as the population of the service area, is evident. Again one can infer that per capita equality is the standard of equity that is employed. Demand is not the basis for equity judgments, because use is an indicator of demand and use is unequal.

The significance of these data depends on additional information. This includes whether either swimming pool's capacity is over-extended by the amount of use it receives, whether hours of operation can be extended, whether use was greater than normal, perhaps because of hotter weather than usual, and so on. That is, the existence of an inequality based on use patterns neither makes it apparent that a remedy is called for nor does it automatically tell one what the best remedy is.

Results

Indicators of results are difficult to obtain. The objectives we described for park services calls for leisure activities that are enjoyable, accessible, aesthetically appealing, and safe. Accessibility is directly measurable with indicators of service characteristics. The foundation for resource analysis is readily available in terms of acreage and distance. Whether services are enjoyable and aesthetically appealing substantially depends upon the perceptions of citizens, although hopefully there tend to be reasonable relationships between these perceptions and the characteristics of parks. Frequency of use of parks, of course, is related to enjoyment, but it also may be related to the number of alternatives one has. Safety can be measured objectively, using accident records and crime statistics. But more important, perhaps, is the perceptions people have of park safety and how these perceptions affect their rates of use and the enjoyment they experience.

These observations introduce the reservations we have about relying upon indicators of park service results. Still, we believe results indicators for parks to be useful for assessing the effectiveness of park services and also useful for comparing the distribution of park services among neighborhoods for the purpose of assessing the equity of park distribution. Use data have added importance in that they take into account the fact that some residents do not rely on the park nearest to their residence, instead traveling elsewhere in the community.

The usage of parks and park facilities is important. Parks are of little value if they are not used. The use of parks in relation to park acreage, facilities, and hours of operation was discussed above under categories of indicators of resources and activities. Another way of looking at usage is in relation to the number of residents of the park service area. Indicators of this type are:

> Attendance per 100 hours of operation (by type of facility)/1,000 residents; and
>
> Number of users of community-serving parks/1,000 residents.

It is of some interest to know the frequency with which the service area's population is using park services. High usage in relation to numbers of residents does not accurately measure park service effectiveness. This indicator also measures the demand of residents for park services. In adding perspective about residents' demand for services, use data may be helpful in combination with resource and activity indicators. Consider the following possible pattern.

Table 4. Selected Indicators of Park Service Resources, Activities, and Results

	Neighborhood 1	Neighborhood 2
Acres of community-serving parks/1,000 residents	6	6
Weekly minutes of swimming pool operation/resident	0.24	0.24
Weekly minutes of swimming pool operation/user	2.40	1.60
Number of weekly users of community-serving parks/1,000 residents	80	180

Both neighborhoods have the same number of acres of community-serving parks per 1,000 residents and weekly minutes of swimming pool operation per resident. Neighborhood 1 has 2.40 minutes of weekly swimming pool operation per user compared with only 1.60 minutes per user in Neighborhood 2, indicating a much higher rate of use in Neighborhood 2. The difference in the number of weekly users of community-serving parks per 1,000 residents is even greater, 80 in Neighborhood 1 and 180 in Neighborhood 2. Though the resource distribution is similar, the use of park services is much greater in Neighborhood 2 than in Neighborhood 1. Local officials must decide in this case whether the appropriate equity standard is equal distribution of resources per resident or per user. A compromise position would be to distribute physical facilities based on residents, but to distribute operating funds and hours of operation on the basis of use.

Low rates of usage do not necessarily indicate low need for service. Three other possibilities are: 1) Residents may prefer facilities that are not available, e.g. tennis courts instead of ball fields, a swimming pool instead of a picnic area; 2) Services offered may be of such low quality that residents choose not to use them; 3) Residents may want to use park services offered but be deterred by the belief that the parks are not safe.

Local officials will learn which, if any, of these possibilities apply only if residents tell them. The systematic way of gathering this information is to conduct citizen surveys. User surveys are helpful in finding why users come and from where they come. Nonusers also must be contacted to determine why they choose not to use park services. To aid administrators in making equity judgments, it is especially important to learn what use citizens make of the park nearest to their residence. Close proximity, within community standards, means little to residents if they do not use a park under current conditions but would use it if conditions, under the control of the parks department or other community agencies, were changed. Opinions should be gathered about park facilities, safety, cleanliness, hours of operation, and helpfulness of personnel. A sample questionnaire is presented in Appendix B to this chapter. The responses will be very helpful in assessing the importance of proximity of residents to actual use of parks. In this way the data are relevant to equity judgments based on equity as equality. By eliciting preferences, they add perspective to demand (use) of data.[2]

Opinions about service quality should not be taken as accurately representing objective conditions for comparative purposes. For example, if respondents in Neighborhood 1 criticize the lack of cleanliness in their neighborhood park, and respondents in Neighborhood 2 praise cleanliness in theirs, a number of explanations may apply. 1) Cleanliness may vary as reported. 2) Expenditures per acre for maintenance may be similar, but varying usage and/or cleanliness habits by users may account for different cleanliness conditions. 3) Respondents in Neighborhood 1 may expect to receive inferior services, and therefore, they may report services as being inferior. 4) Categories such as very good, good, fair, and poor are so indefinite that there is no way to be confident that respondents are applying the categories consistently to similar conditions. 5) Respondents in certain neighborhoods may be dissatisfied with park services in general, with some particular aspect of park services, or with services in general, and may give generally low ratings to each aspect of park services, even though cleanliness may be comparable in neighborhood parks receiving dissimilar ratings. These possible explanations suggest that administrators should press for interpretations of differences. Do citizen responses match whatever objective service data are available? How do field supervisors interpret the findings? What type of response should the different findings be given, e.g. change the conditions themselves, provide additional information for respondents, or treat the responses as symptoms of another cause and try to treat the cause?

Recommendations for Data Gathering

Indicators of resources are the most important type of indicators for analyzing the distribution of park services. They are the type of indicators customarily recommended by the National Recreation and Park Association. They have the great advantage of being easy to gather and to work with. The most useful indicators of resources seem to us to be:

1. Acres of community-serving park land/1,000 residents
2. Number of residents more than 1/2 mile from a neighborhood park
3. Number of facilities (by type)/1,000 residents
4. Number of facilities (by type)/1,000 users
5. Operating expenditures/resident (or user)

These indicators get at accessibility of parks and facilities to users. They deal with the cumulative history of the community (areas of community-serving park land, number of residents more than 1/2 mile from a neighborhood park, number of facilities per 1,000 residents). They take density (indicators 1 and 3) into account, as well as distance (indicator 2). They relate facilities to use (no. 4). Hence, they incorporate a result (use) with a resource for an indicator for which data can be gathered easily, either because fees are collected, as with swimming pools, or because visual observation is easy, as with tennis courts. Annual expenditures (no. 5) per resident or user also are taken into account. Resident data are readily available, and for some facilities, user data will be available making user comparisons feasible. Expenditure data provide a check on current practices, supplementing cumulative history indicators. Another useful way to take recent experience into account is to compute data for these indicators for five years earlier, or three years, thereby gaining perspective on the trend in distribution. Current inequalities in park acreage and facilities are less important if the trend is toward reducing disparities.

Indicators of results are useful. But they are difficult, and costly, to gather. The benefits from having the data may not merit the effort of collecting it. Certainly it is less important than resource data. The resource analysis should be conducted first. It may raise questions that result data would help answer. The most generally useful result data seem to us to be:

Number of users of community-serving park/1,000 residents

Citizen reasons for non-use of the park nearest their residence

If the number of users of parks is low per 1,000 residents, a deficiency on a resource indicator may not warrant a costly remedy. If use of a park is low, the reasons may be ascertained by a citizen survey in which reasons for non-use are determined. Because some reasons for non-use can be changed with expenditures for facilities and operations within existing parks, correcting problems uncovered in this way may be fairly easy. Therefore, the information gathered will tend to be useful for decision-making.

How to Relate Service Indicators to Equity Concepts

These indicators should be used in making judgments whether various equity standards have been met satisfactorily. The three most useful equity concepts are equality, need, and demand. To make judgments about equality, service indicators should be compared with population indicators (per capita, per 100 and per 1,000 residents) and age indicators (persons under age 18, for example). To make judgments about need, service indicators should be compared with general need indicators such as mean housing value or income. To make judgments about demand, service indicators should be compared with use data. These relationships are illustrated below in Table 5.

Table 5. Relating Park Service Indicators to Equity Concepts

Equality

Acres of community-serving park land/1,000 residents[1]

Number of residents by neighborhood more than 1/2 mile from a neighborhood park

Number of facilities (by type)/1,000 residents

Operating expenditures/1,000 residents

Citizen reasons for non-use of the park nearest their residence

Need

Acres of community-serving park land/index that includes mean housing value or income as one variable[2]

Number of residents by neighborhood more than 1/2 mile from a neighborhood park/mean housing value or income

Number of facilities (by type)/index that includes mean housing value or income as one variable

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Need (continued)

Operating expenditures/index that includes mean housing value or income as one variable

Citizen reasons for non-use of the park nearest their residence/mean housing value or income

Demand

Acres of community-serving park land/1,000 users

Number of facilities (by type)/1,000 users

Operating expenditures/1,000 users

Number of users of community-serving parks/1,000 residents[3]

[1] These relationships also can be described for persons under age 18. Calculations can be made per 1,000 residents or per 100 residents. If residents live within the service area of more than one park, assign them to only one park, the park closest to them unless separated by a barrier. Do not count residents twice; double counting will invalidate all the calculations.

[2] The index also probably should include a population and an age variable. For examples of how to construct indices, see Chapter 6 Management Strategies.

[3] If data about all types of users of parks are not available, limit the analysis to users of programs and facilities where counts of users are made.

Footnotes

[1] For further explanation of this method see Donald M. Fisk and Cynthia A. Lancer *Equality of Distribution of Recreation Services: A Case Study of Washington, D.C.*: Urban Institute, 1974).

[2] Useful discussions, and versions of citizen surveys for recreation can be found in Kenneth Webb and Harry P. Hatry, *Obtaining Citizen Feedback: The Application of Citizen Surveys to Local Governments*, (Washington, D.C.: The Urban Institute, 1973), and Harry Hatry, and Diana Dunn, *Measuring the Effectiveness of Local Government Services: Recreation*, (Washington, D.C.: The Urban Institute, 1971).

APPENDIX A

PARK AND PLAYGROUND QUESTIONNAIRE

(Complete this form for each public recreational facility in the city. Include recreation centers, parks, playgrounds, and public school playgrounds if open to the public. Also include private facilities that serve housing developments.)

1. Name of facility____
2. Type of facility (park, recreation center, playground, public school facility)____
3. Street address of facility____
4. Days and hours of operation____
5. Total hours open per week____
6. Park acreage____
7. Annual attendance____
8. How is attendance measured (estimate, exact count, etc.)________________
9. Annual budget expenditures for latest year available________________
10. Number of full-time city employees assigned to facility (calculate separately for year-round and for summer help)________________
11. Number of part-time city employees assigned to facility (calculate separately for year-round and for summer help)________________
12. Number and type of special recreational programs and activities offered at facility each year. Describe in detail.

    ____

    ____

    ____

    ____

    ____
13. Number of picnic tables____
14. Number of restrooms____

15. Amount and type of playground equipment______________________________

____

____

16. Number of baseball, softball, and football fields____________________

17. Number of tennis, basketball, and volleyball courts___________________

18. Number of swimming pools. Indicate type and size of pool_____________

____

19. Year facility was established_______________________________________

APPENDIX B

Parks Survey

Street address

1. What park do members of your household use most often?______________

Why?____

____

2. What park is closest to your residence?__________________________

______________________________ Don't know__________________________

2a. How many times have members of your household used the park nearest to your residence in the last 30 days?

____10 times or more ____1 to 5 times

____5 to 10 times ____Not at all

2b. What other community park have members of your household used in the last 30 days?____

3. On the average during June, July, and August, how many times a week do members of your household use a park or playground?

____5 or more days a week ____2 days a week

____4 days a week ____1 day a week

____3 days a week ____Usually not at all

____Don't know

4. For the park that is closest to you, how would you or your household members rate it?

Name of Park	Characteristics	Very Good	Good	Fair	Poor	Don't Know
	Type of facilities					
	Hours of operation					
	Cleanliness					
	Condition of equipment					
	Safety					
	Amount of space					

Name of Park	Characteristics	Good	Good	Fair	Poor	Don't Know
	Attitude and helpfulness of personnel					
	Cost of using facilities					
	Overall rating					

(These questions can be asked for any facility that either is near the household's residence or which household members have used during the last 30 days.)

The next question is to be asked if household members did not use the nearest park within the last 30 days.)

5. Would you give the reasons why you or members of your household did not use ______________________ during the last 30 days.
(name of park nearest residence)

(Indicate response by check mark.) Name of Park

____

a. Doesn't have facilities we like ______________________

b. Too far away ______________________

c. Do not feel safe there ______________________

d. Do not like the other users ______________________

e. Too crowded ______________________

f. Too difficult to get there ______________________

g. Not clean or well maintained ______________________

h. We were too busy ______________________

i. We don't like to do things in any park ______________________

j. Use of facilities costs too much ______________________

k. Other (specify) ______________________

(These questions can be asked for any facility that is near the household's residence.)

6. How do members of your household get to the park nearest your residence?

____
(name of park)

	Mother	Father	Children
walk			
bicycle			
private car			
bus			
other (specify)			

7. How do members of your household get to the park they use most often? (Put name of park under household members.)

	Mother	Father	Children
	____________	____________	____________
walk			
bicycle			
private car			
bus			
other (specify)			

8. What park facilities (playground with swings and slides, picnic areas, ball fields, tennis courts, swimming pool) do you and members of your household use most often? (Number in rank order if list more than one.)

Mother ____

Father ____

Children (1) ______________________________ (age) ______

(2) ______________________________ (age) ______

(3) ______________________________ (age) ______

9. Are there any changes in park locations, facilities, or activities that would improve the usefulness of public parks for your household?

Yes______ No______ Don't know______ No opinion______

If yes, what additions or changes would you make?

____

____

CHAPTER 5. GEOGRAPHIC ANALYSIS OF PARK DISTRIBUTION

Geographic analysis of service distribution should precede judgments about the appropriateness of a distribution pattern. The preceding chapter focused on indicators of park distribution. This chapter covers the identification of geographic units of analysis and the selection of population and socio-economic data to which service data should be matched.

Geographic Units of Analysis: The Service Area

For each type of park, or facility, for which a distribution analysis is to be conducted, a circle should be drawn representing the park's service radius. The distance of the service radius will depend upon a) the type of park, and b) the distance standard accepted in the community for that type of park. For neighborhood parks, for example, the standard suggested by the National Recreation and Parks Association is a service radius of no more than one-half mile.

One objective is to determine the number of residents who do not live within a service radius. To accomplish that, a circle of appropriate radius, say one-half mile, should be drawn around each park classified as a neighborhood park. A circle also should be drawn around larger parks which perform functions similar to those of neighborhood parks. Those functions will need to be specified in order to decide whether also to draw service lines around school grounds and private recreation areas in developments. For private recreation areas, the service line would not go outside the area of eligible users, but it would not necessarily include all of the private development, since some eligible residents might live outside the service area radius accepted in the community. After service district boundaries are drawn, the area that falls within them should be inspected. Where there are impassable barriers, such as expressways, or barriers passable with considerable difficulty, the service boundaries should be modified to reflect realistic walking paths.

This process can be repeated for each type of park. For each park type, a service radius appropriate to it should be selected. For small and medium size parks, those with a service radius no more than two or three miles, the service area can be calculated in mileage rather than in time. For service areas of greater size, such as for regional parks, driving time is a more suitable criterion for calculating a service area. Ease of access may vary considerably, depending on the location from which one is traveling to the regional park.

Many people will live within more than one park service area. For example, some residents may live within the service radii of two neighborhood parks. For purposes of calculations, each person should be assigned only to one of these parks. This procedure will yield an accurate measure of acres and facilities per 1,000 persons. If residents are assigned to more than one park, being counted two or more times, the calculations will not be valid.

A second objective is to determine whether enough park acreage and other facilities--ball fields, tennis courts, swimming pools, and so on, are available to serve the residents within each service radius. For this purpose, population estimates must be obtained for each service area. The procedure for making population estimates will be described below. At this stage, accurate data are needed on park acreage and on facilities in parks and elsewhere. Data on park acreage and facilities provide the basis for determining whether there are 10 acres of community-serving parkland, or whatever the standard may be, per 1,000 persons within the service area, or whether there is one basketball court for 500 people, if that is the standard.

These service radii also provide the geographic boundary within which to apply the other service indicators discussed in Chapter 4. For example, capital expenditures per resident and operating expenditures per resident should be based on the number of residents in the service area. Three additional calculations are needed in this respect. 1) Some residents will live in more than one service area. Therefore, they will be the recipients of expenditures for each service area. If expenditures for one park are $20 per capita and those for a second park are $15 per capita, then residents living within both service radii would be the recipients of $35 per capita. 2) Some residents will not live in any service area. Therefore, they could be interpreted not to receive any expenditures on their behalf. In this interpretation, a neighborhood would be described in two parts. One percentage of its residents would receive x dollars of operating expenditures per resident, and a second percentage would not receive any. 3) Those living outside the service area, according to community standards, could be assigned to the service area of the park nearest them. This method would affect each indicator that relates a service variable, such as park acreage, facilities, or expenditures, to a population variable, such as each resident or to 1,000 residents. Assume that operating expenditures were $20 per capita, $40,000 for 2,000 residents within the service area and there are 2,000 more residents in the neighborhood outside the service area. If these 2,000 outsiders are included, for a total of 4,000 residents to be served, then per capita expenditures would be $10.

Population and Socio-Economic Data

Each of the indicators discussed above depends upon preparing population estimates for service areas and for territory not covered by service areas. There are two source references for population data, both of them compiled by the U.S. Bureau of the Census. One is Block Statistics and the other is Census Tract Statistics. A block is an area bounded by streets on all sides; usually it is four-sided. A census tract may have several thousand residents and it will be composed of many blocks. Consequently, a census tract is not likely to coincide with a park service area, usually being much larger than a service area for a neighborhood park. Thus, divisions of census tracts are needed to make estimates for service areas. But no sound basis is available for making these divisions, except by referring to block data. Therefore, it is sounder to build population estimates for service districts from block data. Because the census is conducted only at 10 year intervals, the data become unreliable, especially in areas of rapid change, either from construction, abandonment, or doubling up. Planning departments may update these population estimates periodically, using school data, electrical hook-ups, and building and demolition permits. Some inaccuracy, however, is inevitable.

One problem with block statistics is that few data items are included there. Block data are limited to population, number of blacks, and median value of owner occupied housing units. One can base the population estimates on block statistics. These data also can be used to determine whether one or more black neighborhoods fall below community standards for park services and how black neighborhoods compare with white neighborhoods in the park services they receive. Housing value data can be substituted for income data, or used in their own right to infer need for park services. That is, housing value could be assumed to coincide, roughly, with less interior and exterior recreation space, less money with which to purchase private recreation, and less mobility to get to a variety of public and private recreation sites. Therefore, one could use housing data to determine whether the distribution of park services was consistent, or was inconsistent, with the need for these services. Housing data could be included in an index by which priorities are determined for supplementing the current distribution of park services.

Census tract data cover a wider range of items. They include age, income (percent families earning an income below the poverty level), education, and mobility (percent households without an automobile). Some of these data are useful. Age can be used to determine the distribution of young persons, the age group which uses parks more heavily than other age groups. The income data can be used as a more direct measure of need than housing data, although the difference between these indicators for inferring need probably is modest. Data about households without cars can provide additional perspective on need for park services. In each instance, however, the potential utility of the data must be compared with the probable inaccuracies of translating it into service area boundaries. Transposing census tract data into service area data requires assuming that the population in the portion of the census tract in the service area has the same characteristics as the population of the entire tract. The strongest argument for this assumption is that there is no basis for any other assumption, short of interviewing residents as though a new census were being conducted. The simplicity of the method reduces the cost, and the accuracy, of the analysis.

Conducting Analyses and Using the Results

The data analysis methodology is simple, though laborious and time-consuming. A great deal of addition is necessary, as data for component parts are summed into totals for the whole. Indicators for services must be divided by indicators of population. Jurisdiction-wide means and medians should be recorded. The location and number of residences and service areas that are below community standards for park services should be identified.

Local officials primarily will be concerned with places that lack services that community standards suggest they should have. They will want to know which places are most lacking in park services— which are farthest from parks, which have the fewest facilities available to them, which have the least hours of operation, which the least operating expenditures. The seriousness of deficiencies increases if the deficiencies are cumulative, if the same places are deficient in park services using several indicators. A remedial strategy could rely on any of the conceptions of equity described in Chapter 2. Primary concern with equality, need, demand, preference, or willingness-to-pay, or a balance between two or more of these alternatives, could inspire a change strategy. The equity option relied upon will influence decisions about what data should be analyzed. If need is an important equity consideration, then data about house value and income may be used. Concern with constitutional equality may require that racial data be analyzed to determine whether minority neighborhoods consistently receive less service than other neighborhoods.

More elaborate statistical techniques may be needed if a court case is pending. It may be necessary to determine whether there is a statistically significant pattern of certain types of neighborhoods, perhaps black neighborhoods, receiving fewer park services than other neighborhoods. Then correlation and regression analysis may be warranted. However, for decision-making by administrators and elected officials, the simpler techniques referred to above should be sufficient.

The main point of the analysis will be:

1. Which areas are deficient in park services according to accepted community standards?

2. Are these deficiencies cumulative on several indicators or are they based on one or two indicators?

3. What data are relevant to determining priorities for bringing neighborhoods closer to meeting community standards?

Using the analysis as background, a strategy then should be developed for change.

CHAPTER 6. MANAGEMENT STRATEGIES

This final chapter addresses the subject: How should equity concepts, decision rules, and service indicators be used? In examining this subject, the following questions will be addressed:

1. Which equity concepts should be relied upon for park services?

2. How should equity concepts, decision rules, and service indicators be integrated?

3. How can indices of service and population measures be constructed and used to determine priorities?

4. When should data be gathered and what data should be selected?

Which Equity Concepts Should be Relied Upon for Park Services?

Equity judgments are value judgments. Guidelines can be suggested, but ultimately each individual must decide. On what do we base our suggestions? First, they are based on the general objectives of park services. The first step to take in considering which equity concepts to apply is to ask how their application will aid in achieving service objectives. Second, some of these suggestions are based on common practices in cities. In Chapter 2, we noted there is variation in the decision rules used in different cities and that the consequences of these decision rules for service distribution also vary. Not enough research has been conducted for anyone to be confident about which decision rules are used most frequently. However, our research has enabled us to determine that the suggestions for selection of equity concepts that we make below are consistent with some of the practices in a number of major cities. Third, our suggestions reflect our own value judgments. One of our values is that equity concepts should be applied so as to minimize spillover effects— consequences from the behavior of individuals that harm their neighbors. While we believe there is a certain logic to our suggestions, we do not pretend to have overcome our own biases nor to have avoided all misconceptions.

Parks serve the social and physical development and enjoyment of individuals. Their objective is to facilitate that development and enjoyment. The key characteristic setting them apart is that use of parks is discretionary and at the liesure of residents. Residents choose, at their discretion, to use parks or not to use them.

The equity concepts equality, need, and demand each should be used in distributing park services. The distribution of parks should be equal in the sense that an acceptable minimum (or greater) level of service should be provided to the residents of every neighborhood. One of the main conditions which affects the extent to which these facilities are used is their accessibility to residents. Accessibility varies with distance and with the transportation options of residents. It is more difficult for low income residents to travel long distances, since they have fewer transportation resources. Moreover, low income residents can afford fewer recreation services that are provided by the private sector. Low income and a shortage of transportation resources are evidence of greater need. The objectives of park services to facilitate social and physical development and enjoyment will be achieved more satisfactorily if need is recognized in the distribution of park facilities.

Demand also has a worthwhile role, because some facilities are used more heavily than other facilities. Therefore, it may be reasonable to provide more equipment and materials in parks that are used heavily than would be warranted based on the criteria of equality and need. The distinction here is that new parks and some facilities should be more responsive to need in location decisions, while equipment and materials probably should be more responsive to demand.

Preference and willingness-to-pay have more specialized application. Preferences usually are too costly to discover, if they are not expressed as demands. They are useful to provide suggestions for park facilities, equipment, and programs to be made available in parks. Willingness-to-pay is administratively impractical or contrary to the objectives of many services. It should be applied primarily to special services, golf courses, recreation programs, and the like, which serve a limited portion of the population.

Integrating Equity Concepts, Decision Rules, and Service Indicators

The selection of service indicators should be integrated with choices of equity concepts and decision rules. Suppose that the equity concepts one wishes to apply to an aspect of a service have been selected. Decision rules to implement those equity concepts then can be identified. The indicators of service distribution that will facilitate judgments about the appropriateness of the implementation of the equity concept also are rather readily discerned.

How should funds be distributed for new facilities and equipment in existing neighborhood parks? It has been decided, we will presume, that the equity concepts of need, demand, and equality will be used to distribute services. Why? Lower income persons are less able to afford private recreation. They also may have less nearby park space because of greater density in low income areas. Therefore, it is reasonable to give priority to low income areas in dispensing facility and equipment funds to existing neighborhood parks.

Demand helps limit potential excessive emphasis on need. If parks in a low income neighborhood are not used, then they should be given lower priority than they would merit on the basis of need alone. Conversely, more heavily used parks could be given higher priority than would be warranted on the basis of need alone.

Equality comes into play in that park services for each neighborhood should meet minimum (or greater) standards. When deficiences exist, however, priorities should be developed relying on need and demand.

The following decision rules would be among those useful in implementing the concepts of need and demand:

1. From a list of neighborhood park facilities and equipment needing repair or replacement, initial priorities will be selected based on the income characteristics of the neighborhood served, low income ranking first and high income ranking last.

2. This priority list will be modified based on information from park records and park personnel about the usage of these parks and their facilities and equipment, low usage being moved down the priority list.

3. Additions to neighborhood park facilities and equipment will be based, first, on need (income characteristics of the neighborhood), modified, second, by usage of the park to shift priorities established by the first criterion.

4. Replacement and repair of facilities will be given priority over additions, replacement and repair also being considered a manifestation of demand (heavy use). Administrators also should consider whether replacement and repair is caused by vandalism and make judgments whether the risk of recurrence warrants the cost of replacement or repair.

Although the above decision rules are based on the characteristics of the service area, for example, persons within one-half mile of each park, the characteristics of persons outside the service area, but who lack a park within the community's specified acceptable distance, should be assigned to the nearest accessible park in developing a ranking system. Thus, it is important to include numbers of persons outside the service radius but unserved by another park in developing the ranking system. This is another reason why demand should modify need. Presumably many of these persons outside the service area will be using the park, or parks, nearest to them, increasing use above what would occur from the population within the service radius.

Indicators that would be useful in determining whether the need and demand concepts of equity are being implemented satisfactorily include the following:

Facilities needing repair or replacement per 100 persons in service area (and unserved adjacent area).

Equipment needing repair or replacement per 100 persons in service area (and unserved adjacent area)

Cost of facilities needing repair or replacement per 100 persons in service area (and unserved adjacent areas)

Cost of equipment needing repair or replacement per 100
persons in service area (and unserved adjacent areas)

Number of facilities and pieces of equipment (by type)/
index that includes mean housing value or income as
one variable

The indicator problems associated with the decision rules for these conceptions of equity for distributing facilities and equipment to existing neighborhood parks primarily involve problems of gathering data about the population. Besides gathering data inside the service radius, data will be needed for the area outside the service radius. These data should identify the number of persons. Income data for census tracts or enumeration districts will be difficult to relate accurately to service district boundaries. A substitute method probably will be needed, such as using housing value data available in U.S. Bureau of the Census Block Statistics. Data about park facility and equipment usage also will be needed, or the judgments of park personnel must be relied upon.

Once the subject of concern is clearly identified, such as how to distribute funds to existing parks, the data useful for making that decision also can be identified clearly. The linkages between concepts of equity, decision rules, and indicators of service and population characteristics can be identified by careful thought and systematic attention. What looks like a complex, even esoteric subject when examined abstractly, becomes readily manageable when specific decisions are confronted.

How Can Indicators Be Used to Establish Priorities?

Indicators can be helpful in determining which areas deserve attention and then what sequence in which to make park investments. Consider the subject of where to locate new neighborhood parks. An equality standard can be used to determine what areas deserve attention. The standard adopted by the community may be that everyone should be within 1/2 mile of a neighborhood park. Those areas left out, according to this standard, can be determined by drawing service radii around each park meeting the classification of neighborhood park or a substitute for it such as (a portion of a community-serving park, part of an elementary school playground, a private park serving a private development), after adjusting the boundaries of the service area to reflect impassible barriers to walking.

How should priorities be established among those areas deficient in neighborhood park acreage? Indicators of population and housing can be used, but which indicators and how should they be manipulated? The simplest way would be to give priority to the area having the most people outside the 1/2 mile service standard. The second simplest way would be to give priority to the area having the most persons under age 18 outside the 1/2 mile standard. This method would reflect the probability that neighborhood parks would be used most heavily by young people.

We suggest considering additional factors which take need into account. Need can be inferred from income or housing value and from population density. Income or housing value provides clues about access of individuals to private recreation and to more distant public recreation. Population density provides clues about availability of private yard space. These indicators, toether with data about numbers of persons under age 18, also provide clues about potential demand. Thus, use of these indicators incorporates consideration of equality, need, and demand.

Specifically, we suggest gathering data for areas outside the 1/2 mile service radius about the total number of persons under age 18, the population density per acre, and the average value of owner occupied housing. These data are available in or can be calculated from the Block Statistics of the U.S. Bureau of the Census. Numerical rankings then should be established for each area for each indicator. These rankings then should be added together, yielding a total. These methods are illustrated below in Tables 1 and 2, using data that were gathered by graduate students in Charlottesville, Virginia in 1977.

Table 1. Categories for Determining Priorities Among Areas Deficient in Neighborhood Park Acreage

	Order of Priority (1 is Lowest and 4 is Highest)			
	1	2	3	4
Total persons under 18 years not served	0-200[1]	201-400	401-600	Over 600
Population density per acre	0-3.0	3.1-5.0	5.1-7.0	Over 7.0
Average value of owner occupied housing (000's of dollars)	Over 35	21-35	13-20	Under 13

[1] These numerical groupings seemed appropriate given the distribution of the data found in Charlottesville. Numerical groupings should be adopted in each community that will produce a reasonable distribution of cases in each group.

Table 2. Application of Rankings in Each Category to Areas Deficient in Neighborhood Park Acreage

	Areas Deficient in Park Acreage with Order of Priority						
	A	B	C	D	E	F	G
Total persons under 18 years not served	3	2	2	1	1	2	4
Population density per acre	4	3	2	4	1	2	2
Average value of owner occupied housing	2	3	2	4	1	1	1
Total (order of priority)	9	8	6	9	3	5	7

The area with the highest score would be given first priority. Other factors could be considered, which also could help break ties. These would include such items as which areas of the community have lacked park investments in recent years, which areas of the community use existing parks most heavily, and the like.

A ranking system for new park development has been used by the Charlotte-Mecklenburg Planning Commission in preparing priorities for park development for the City of Charlotte, N.C. The system differs slightly from the system developed at the University of Virginia for use in Charlottesville. The Charlotte, N.C. system analyzed every part of the city, indicating "which service areas are presently in need in neighborhood park land. These areas have the greatest need at this time based on the concentration of population not being served, the number of dwelling units per acre, and the median family income. A rating is assigned to each of these three criteria. The composite rating is then translated into the priority ranking."

The way the system works is described below:

Rating Determination

	2,000 and Over	1,200-1,999	Under 1,200
Estimated number of persons not served	1	2	3
	4.00 and Over	2.50-3.99	Under 2.50
Dwelling units per acre	1	2	3
	Under $9,000	$9,000-14,999	$15,000 and Over
Median family income	1	2	3

Ranking Determination

Composite Rating	Priority Ranking
3-4	A
5	B
6-7	C
8-9	D

Source: An In-Depth Look at Neighborhood Park Land Needs Within the City of Charlotte, Charlotte-Mecklenburg Planning Commission, July 1974, p. 51.

In Charlotte, census tract data were used to estimate median family income for the general area not within the designated neighborhood park service radius.

Equipment and facilities can be added more readily to existing neighborhood parks than new parks can be created. Similar techniques can be used in making priority decisions in both instances. In determining which parks should get additional basketball courts, picnic tables, slides, swings, and the like, standards for the community could be adopted and used, without regard for how many of these facilities currently exist in each neighborhood park. An alternative is to determine the number of each type of equipment and facility per 100 residents, or per 100 residents under age 18, in each service radius and in adjacent unserved areas, and to compare each neighborhood park with the best equipped park for each type of facility and equipment. For example, suppose the best equipped neighborhood park had .28 basketball courts per 100 residents under age 18. Each neighborhood park would be compared with it.

An example is given below in Table 3.

Table 3. Example of Comparing Facilities and Equipment in Neighborhood Parks Percentage of Standard

	Park 1	Park 2
Basketball courts under 100 residents under age 18 Standard .28	40	30
Climbing structures per 100 residents under age 18 Standard .77	30	20
Mean Score	35	25

In this example, in Park 1 there are 40 percent of basketball courts of the standard for the community, compared with 30 percent of the standard being met in Park 2. Based on this evidence alone, Park 2 would deserve priority for investment in new basketball courts. Before making that decision, officials might want to know how each park compared with a community standard for climbing structures, as in the example above, and perhaps for other items, such as swings, slides, ball diamonds, benches, and picnic tables. The cumulative picture of facilities and equipment could be considered, or individual items could be considered separately, with a portion of the budget being assigned to add each type of equipment and facility.

Population and housing characteristics also could be considered in making decisions about adding facilities and equipment. Data could be gathered about the total residents under age 18 (potential demand) and the average value of owner occupied housing (a need indicator as a substitute for income information). An index then could be constructed, as was done with the procedure for determining priorities for developing new parks. An example is given in Table 4.

Table 4. Categories for Determining Priorities for Adding Facilities and Equipment to Existing Neighborhood Parks

	Order of Priority (1 is Lowest and 4 is Highest)			
	1	2	3	4
Total residents under age 18	0-300	301-600	601-900	901-1200
Average value of owner occupied housing (000's of dollars)	40 and over	30-40	20-30	Under 20
Facility-equipment deficiency score (percentages)	Over 60	41-60	Under 25	

Each park could be given a score from 1 to 4 on each of these indicators and indices. If officials wished to weight them equally, then they could be added. Or they could be multiplied by the weights that officials believed each should receive before they were added together. By using a method like this, an equality concept (the community facility and equipment standards) can be used for initial guidance. To it can be added consideration of need (housing value) and potential demand (residents under age 18). Since existing parks are being considered, it also would be useful to include data on actual use (demand) of the parks and equipment. If equipment is little used in a park that the data indicate is deficient in equipment and is a high need and high potential demand area, then additional consideration should occur before investments are made. Low usage may be a result of absence of equipment or equipment in bad repair.

Although the data gathering process will be most efficient if data are gathered to serve several purposes, in some instances administrators may gather data solely to analyze service distribution equity. What should trigger the decision? When should administrators decide to gather and analyze data for the purpose of evaluating service equity?

The most important situations in which administrators should gather and analyze data to evaluate the equity of service distribution are:

1. When they believe that an important aspect of a service may be distributed in ways which they consider inequitable, but they are not sufficiently confident of their position.

2. When they believe there is a reasonable chance that a change can be brought about, if their beliefs about service inequities prove to be accurate.

3. When a substantial number of complaints have been made about allegedly inequitable service delivery.

4. When they believe one or more neighborhoods may be the victims of many inequities in service distribution.

When any of these four conditions exist, administrators should consider having data about the relevant aspects of service distribution gathered and analyzed. Data analysis decisions should be based on the following considerations:

1. Which data items are most directly focused on resolving the beliefs of administrators about possible service inequities.

2. Which data items can be gathered at least cost.

3. Which data items will aid the most in meeting related policy-making needs, such as needs for capital programming, evaluation of service effectiveness, and management by objectives.

The first consideration usually will be met best by including at least one indicator each of resources, activities, and results to provide information about these three aspects of the service system. The second consideration tends toward selecting few indicators. But the third consideration tends toward selecting a larger number of indicators to achieve a larger number of policy-making objectives. The development of an information system that is adequate to evaluate service distribution equity can best be achieved if equity analysis is integrated with other types of policy-making analysis.

A Final Word

Why bother with evaluating the equity of urban service distribution?

The distribution of services is the principal determinant of who receives the benefits of local government activities. That is ample reason to analyze and evaluate service distribution.

Generalist administrators have additional reasons to be concerned. City managers, mayors, budgeters, and planners often have only a modest role in influencing important aspects of service distribution. Generalists should have a larger role. They need to know what operating departments are doing, why they are doing it, and what the consequences of departmental decisions are.

Obtaining more information is one method of increasing influence and control. Other steps are helpful. Equity concepts should be understood. The purpose of the methodological framework for selecting indicators needs to be grasped.

Decision rules constitute the heart of the process of influence and control. Service distribution consequences are determined by decision rules. Administrators who want to evaluate service equity and who want to increase their influence over service distribution consequences should focus their attention on decision rules.

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HANDBOOK FOR ANALYZING THE DISTRIBUTION OF POLICE SERVICES

Module 5

Developed by

DIVISION OF URBAN AND ENVIRONMENTAL PLANNING, SCHOOL OF ARCHITECTURE, AND THE

INSTITUTE OF GOVERNMENT

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CHAPTER 1. THE PARADOX OR URBAN SERVICE DISTRIBUTION: THE ROUTINE AND THE MYSTERIOUS

The provision of most local public services involves a paradox. Most services are routine. Nearly everyone is familiar with them--police, fire, refuse collection, water, parks, recreation, libraries, sewage disposal, bus service. Yet little is known--by citizens, by elected officials, even by administrators and planners--about who gets how much of them. Deciding who gets what is the essence of politics. The provision of services to people is the essense of administration. But administrators rarely systematically analyze who gets how much of the services they distribute. Instead, they use decision rules that seem reasonable to routinize service distribution. These rules emerge from professional standards, from history and custom, from the pursuit of efficiency, from aspirations for effectiveness. What are the consequences of these decision rules? What are the alternatives administrators should consider in deciding whether a service distribution pattern is equitable? What are the main conceptions of equity?

These are some of the questions that are examined in this handbook about the distribution of police services. In our discussion of these questions, we will attempt to make equity a concept that police administrators and other local officials can use in practicing their craft, just as they use the concepts of efficiency and effectiveness.

Conceptions of Equity

Every service distribution pattern reflects a conception of equity. The conception of equity may be unarticulated. Nevertheless, it will be manifested in decision rules, in routine procedures for distributing services. In interviewing local government officials, we have found that two conceptions of equity were most frequently mentioned.[1] The first is that everyone should receive equal services. The second is that local officials should respond to demands. When the questioning probed behind these general responses, a number of interesting complications became apparent. In many instances, equal service distribution per capita is a vague goal, often inappropriate, frequently modified by circumstances, rather than an operating procedure. In some instances, services explicitly are distributed unequally per capita, even when administrator's top-of-the-head response is that equal per capita service distribution is the department's operating norm. In some instances, equal service distribution is proclaimed, though in fact administrators do not know whether services are equally distributed.

Need is a third conception of equity that commonly is used for certain services. The argument is that as needs vary, services also should vary. For example, police patrol manpower often is distributed according to some criterion of need (crime rates, for example). In this instance, the condition the service is intended to improve is used as an indicator of need for the service.

Preference represents a fourth conception of equity. This notion of equity assumes that consumer preferences should determine the quantity and quality of services that local governments provide. Preferences differ from demands in that they include unarticulated demands as well as those that are expressed. Unarticulated demands must be elicited. The information costs therefore are high. This makes preference less practical and less used, as a conception of equity than equality, need, and demand.

The fifth conception of equity is that willingness-to-pay should determine service distribution. Choice is regarded as the best guide to preference and choices are thought to be most meaningful when services are paid for directly. User charges and special assessment financing implement the willingness-to-pay concept of equity. Since willingness-to-pay is related to ability to pay, the implication for service distribution is that relatively well-off persons are likely to obtain more of the service provided in this way.

Conceptions of equity are implemented, explicitly or implicitly, through decision rules. Decision rules are rules-of-thumb, routine procedures, and customary practices that determine how most operating and capital expenditures are made. Decision rules have consequences for the distribution patterns for each service.

Service Effectiveness

Administrators should evaluate services in terms of their achievement of service objectives. Varying degrees of achievement of service objectives suggest whether services are more, or less, effective. Judgments about service effectiveness should be made cautiously, because conditions often are influenced by events other than those involving the service itself. But one aspect of assessing service effectiveness is clear. It is not adequate to determine community-wide arrest rates. It is not acceptable to have variation among service districts of 10 percent to 70 percent for arrest rates for burglaries.

Geographic distribution is an integral part of service effectiveness. Administrators should analyze service distribution as a basis for estimating effectiveness and in order to provide a basis for making judgments about service equity.

The essence of the methodology proposed is that multiple indicators of service distribution should be used. A framework should be used that encourages attention to the entire service delivery process. The framework proposed here uses four categories to analyze service distribution.

These categories are resources, activities, results, and impacts. The first three categories have the greatest usefulness. Often the analysis of service distribution has relied upon resource indicators--expenditures and personnel in particular. Indicators of service activities and results also should be stressed. In fact, service analysis that depends upon resource indicators may be seriously misleading.

Purpose of This Handbook

The purpose of this handbook is to show administrators and students how the concepts of equity and service distribution can be useful in local police planning and management. Efficiency and effectiveness are traditional goals of public administration. Methods have been developed to make these goals operationally useful. Equity is espoused, but its meaning is obscure. The undoubted importance of equity makes its meaning worth searching for. Equity will be a more useful concept, if its several meanings are recognized and if administrators, and others, try to select carefully the particular conception of equity most appropriate to their service, circumstance, and values. The key to operationalizing equity is to develop methods to analyze service distribution and to identify the decision rules whose use leads to a particular pattern of service distribution. Concepts of equity, decision rules, and service distribution patterns then can be related to each other. Through this interaction, local officials can decide whether to change any, or each, aspect of the service distribution network--the dominant conception of equity, the decision rules, and/or the service distribution pattern.[2]

FOOTNOTES

1. References in this chapter to decision rules and processes used in various communities are based on interviews with local government officials conducted by the authors.

2. The book and handbooks that accompany this publication, by the same authors, deal with parks, solid waste collection, and libraries, and the general subject of Equity and Urban Service Distribution. They examine concepts of equity, decision rules, and service distribution information systems in detail for these services. Legal issues are examined in Chapter 5 of the book by the authors entitled Equity and Urban Service Distribution, published by the National Training and Development Service.

CHAPTER 2. DECISION RULES AND THE DISTRIBUTION OF POLICE SERVICES

Introduction

Decision rules are the standard operating procedures used by municipal departments to distribute a service. Decision rules deserve attention because they have distributional consequences. They incorporate some notion of equity. Often, this conception of equity is implicit rather than explicit. A consequence of decision rules is that they influence who gets how much of what. Because of these rules, some citizens may get more services and some may get less. Rules are often technical in nature. Therefore, generalists and citizens are seldom aware of their operation. We will list several decision rules that are used in police departments. We will then examine their distributional consequences.

Examples of Decision Rules

(1) Police patrolmen are assigned partially on the basis of population so that each district and beat has at least X patrolmen per 1,000 residents.

(2) Patrolmen are assigned partially on the basis of total reported crime rates. If a district accounts for 10 percent of the total reported crime in the city, it receives approximately 10 percent of available manpower.

(3) Police manpower is assigned partially on the basis of total calls for service. The higher the total number of calls for service in a district or beat, the more manpower it receives.

(4) All calls for police service are responded to, although reports of serious incidents receive top priority.

(5) Police investigators are assigned partially to districts on the basis of population so that each police district has at least X investigators per 1,000 residents.

(6) Police investigators are assigned partially on the basis of total reported crime rates.

Another set of possible decision rules is as follows:

(1) Police manpower is assigned partially on the basis of total actual crime rates.

(2) Patrol manpower is assigned on the basis of a weighting scheme. The number of Part I offenses (Serious Personal and Property Crimes) are considered more important in allocating manpower than the number of total crimes. If a district accounts for 10 percent of all actual serious personal and property crimes, it receives 10 percent of patrol manpower.

(3) Investigators are assigned on the basis of the number of actual serious personal and property crimes.

Still another set of decision rules is as follows:

(1) Police manpower is assigned in order to achieve equal arrest and clearance rates among districts.

(2) Manpower is assigned in order to achieve equal crime rates among districts.

(3) Investigators are assigned in order to achieve equal arrest and clearance rates among districts.

At first glance, any and all of these rules appear rational and reasonable. However, further examination reveals that each of these decision rules has distributional consequences. The first set of rules incorporates three different conceptions of equity. Rules 1 and 5 (population) emphasize equality as equity, rules 2 and 6 (total reported crime rates) employ need as equity, and rules 3 and 4 (calls for service) rely on demand as equity. If rules 1 and 5 are used to guide the allocation of resources, every district and beat will receive the same number of patrolmen and investigators per 1,000 residents. The variation in crime rates and calls for service will have little effect on the distribution of police manpower. However, crime rates and requests for service do vary among districts and beats. If equality per capita is used to deploy manpower, high crime areas will receive no more resources than low crime districts. Consequently, patrolmen assigned to high crime areas will have less time to engage in preventive patrol. Equality as equity provides an equal level of services to all residents. However, not all neighborhoods have an equal need for police services.

Equality as equity in the allocation of police resources deprives high crime neighborhoods in two ways. First, no effort is made to assign more patrol officers and investigators to deal with the higher incidence of criminal behavior. Second, patrolmen in high crime areas are required to spend a greater percentage of time handling reported criminal incidents. Therefore, preventive patrol will be given less emphasis than it receives in low crime areas.

Demand as equity also has distributional consequences. Rule 3 requires that manpower be assigned on the basis of total calls for service. Police services are provided to areas that request them. The rule affects who gets what because some areas make more requests for police assistance than others. Assigning manpower on the basis of calls for service (demand) may have consequences that differ from allocating resources on the basis of crime rates (need). Although many calls are made to report a crime, other calls for police assistance may have little to do with criminal behavior. Instead, these contacts may deal with requests for information or minor traffic accidents. If total calls are an important factor in determining the allocation of police resources among districts and beats, areas that generate a higher level of requests for assistance will receive more manpower.

From one perspective, distribution on the basis of demand appears fair. Patrol officers are assigned to those areas that make a large number of calls for service. The more calls citizens in a particular neighborhood make, the more manpower the neighborhood receives. However, demand (calls for service) as a guide to the distribution of police services has several disadvantages. First, some citizens are less likely to contact the police than others. In particular, blacks are less likely to call a public agency to request assistance than whites. Therefore, poor neighborhoods may generate fewer routine calls (burglary reports, for example) for assistance than wealthier neighborhoods. A second shortcoming of demand as equity is that a low level of calls for service in a particular neighborhood may be related to substandard service. For example, few requests for police assistance cannot be interpreted to mean that the residents do not want police assistance. Instead, repeated unsuccessful attempts to obtain satisfactory service may eventually depress the number of calls that are made. If the police take too long to arrive in response to a call and if they do nothing when they arrive, the citizen may not call the police in the future even if he requires their assistance. If this unsatisfactory service applies to an entire neighborhood, the neighborhood as a whole may make fewer calls. Under demand as equity, the area will be assigned fewer patrol officers.

A third disadvantage of demand as equity is that high crime (high need) areas may not receive sufficient resources. High call neighborhoods may not be high crime areas. A large percentage of calls from a particular neighborhood may deal with minor incidents. If total calls are used to distribute manpower, a large number of minor, routine requests for assistance may be considered more important in assigning patrol officers to districts and beats than a smaller number of major personal and property crimes.

Rule 4 (all calls are responded to) also has distributional consequences. If all calls, both routine and priority, are responded to, a significant portion of the patrol officer's time will be required to deal with a variety of relatively minor requests for police assistance. Consequently, priority calls, serious crimes, and the preventive patrol function will receive less attention than they would if nonserious calls were ignored. The time a patrolman spends dealing with a minor traffic accident or a request for information cannot be devoted to preventive patrol or the investigation of a major crime. Therefore, neighborhoods with a high crime rate may receive fewer police resources under Rule 4.

Rules 2 and 6 (total reported crime rates) will have consequences for the distribution of manpower that differ from the rules discussed above. Since some districts have more crime than others, these districts will receive more manpower than they would under equality as equity. High crime areas may also not be the same areas that generate a large number of calls for assistance. Therefore, neighborhoods with a high level of total reported crime may receive more manpower under need as equity (total crimes) than they would under demand as equity (total calls).

As previously noted, rules may be complex. In all likelihood, they will rely on data that is technical in nature (crime rates, calls for service). There may also be a large variety of rules. The choice of one rule or one set of rules to guide the distribution of police services may be a function of history, of circumstance, of the individual values of administrators. What is significant about the large number of different rules that police officials could and do employ to distribute police services is that each rule selected will have consequences that differ from every other rule. The second set of rules discussed at the outset illustrates this fact.

Rules 1, 2, and 3 in the second group emphasize need as equity as opposed to equality, demand, and need as equity in the first set of rules. The distributional consequences of these rules also differ from the effects of the first group of decision rules. For example, Rule 1 assigns police manpower on the basis of total actual crimes. That is, districts and beats with a high level of actual crimes are assigned more patrol officers and investigators. The consequences of distributing resources on the basis of this rule may differ considerably from allocating them on the basis of reported total crime rates. In general, reported crime rates seriously underestimate the actual incidence of criminal behavior. In addition, some individuals (the young, in particular) are less likely to report crimes than others.[1] If reported rather than actual total crimes are employed to allocate police manpower, some neighborhoods may receive more patrol officers than they should while others will receive less.

In 1975, Charlotte, North Carolina, conducted a victimization survey in order to determine the actual incidence of crime [2] The survey showed that the actual rate of crime in the city was twice as high as the official rate. Eight of the 10 police areas in the city experienced actual rates of crime from two to four times higher than the official rate.

The Charlotte survey demonstrates that reported crime rates may seriously underestimate the actual incidence of crime. Also, some areas may be more likely to report criminal behavior than others. Therefore, reported crime statistics may seriously distort the actual distribution of crime among neighborhoods. If police manpower is assigned on the basis of reported crime rates, neighborhoods that experience a high rate of actual but unreported crime may receive fewer patrol officers and investigators than they would if victimization surveys were used to determine crime levels. Since most police departments rely on reported crime rates, the reported crime rule may have significant distributional consequences. The pattern of resource distribution that occurs under the actual crime rule may differ substantially from the pattern that results from the reported crime rule.

Rules 2 and 3 in the second set of decision rules (manpower is assigned on the basis of the number of Part I offenses) will also have distributional consequences that differ from the other rules discussed. The distribution of total crimes, which includes Part II (a variety of minor crimes) as well as Part I crimes (murder, negligent homicide, rape, aggravated assault, robbery, theft, burglary), may differ from the geographic distribution of Part I crimes. Therefore, the manpower assignment pattern that results from using serious personal and property crimes as a decision rule may well differ from the pattern that occurs under the total crime rule. There are at least two reasons why the distribution of total crimes will probably differ from the distribution of serious personal and property crimes (Part I offenses). First, the evidence suggests that poor black neighborhoods experience a higher incidence of serious crimes than other neighborhoods.[3] Second, minor crimes are less likely to be reported to the police than major crimes. Therefore, it is likely that the serious crime rule will produce a pattern of manpower distribution that differs from the outcome of the total crime rule. In addition, the nature of the crime data used will affect the operation of both rules. Reported crime statistics will underestimate both total and serious crimes, although the distortion will be more pronounced for the total crime rate. Also, reported crime figures will be less accurate for some neighborhoods than for others.

The rules in the first two sets of decision rules emphasize equality (equal manpower per 1,000 residents), demand (total calls for service), and need (reported and actual incidence of total and serious crimes) as equity. However, these rules emphasize the distribution of resources (patrol officers and investigators) and activities (response time). They say nothing about the distribution of results (arrest and clearance rates) and impacts (crime rates).

None of these rules attempts to equalize conditions among neighborhoods. Even if somewhat more patrol officers and criminal investigators were assigned to high crime areas, it is unlikely that arrest, clearance, and crime rates would be equalized. Equality of results and impacts (crime rates) might require a much greater employment of resources in some neighborhoods. Since crime rates are affected, in part, by conditions beyond the control of the police (poverty, density, unemployment, age, values), equality of impacts (crime rates) among neighborhoods is an unrealistic goal. However, reasonably equal arrest and clearance rates per 1000 serious or 100 total crimes is a reasonable goal. The important point is that an equal arrest and clearance rule may require a pattern of manpower distribution that differs substantially from the equality per capita, total calls for service, or crime rate rules.

Some Examples of Actual Decision Rules

Decision rules and the conceptions of equity they implicitly embody are relevant to the operational concerns of municipal service departments. Police agencies do rely on decision rules to allocate services. These rules have consequences for who gets what.

The conceptions of equity most often employed in police departments to guide service distribution are need, demand, and equality.[4] In Rochester, N.Y., patrol manpower is assigned to police districts on the basis of calls for service (demand as equity) and crime rates (need as equity). Within each district, criminal investigators are assigned, in part, on the basis of arrest prospects. However, the assignment of both patrolmen and investigators is modified by equality as equity. Each district receives a minimum number of patrolmen. This number exceeds the manpower level each district would qualify for if crime rates and calls for service alone determined resource allocations. Also, eight investigators are assigned to each of the seven police districts. Therefore, need and demand are modified by equality.

In Richmond, Va., need, demand, and equality are again implicitly embodied in the decision rules used to assign police manpower in the city. Each district receives a minimum of one police patrol (car, motorcycle, foot, or mounted). However, equality in distribution is modified by need (crime) and demand (calls for service). High crime and calls for service districts are assigned several additional patrols. The result of this rule is that the Central Business District receives a disproportionate share of available manpower. Investigators are assigned on the basis of crime rates and the severity of the crime. That is, districts with high crime rates and a larger number of serious crimes receive more investigators.

In Charlotte, N.C., equality as equity ensures that each police area is assigned a minimum number of patrol officers. Beyond this minimum standard, high crime (serious personal and property crimes) and calls for service areas receive additional patrolmen. Investigators are assigned on the basis of the number of serious (Part I) crimes.

In Boston, two decision rules determine the assignment of patrol manpower. First, densely populated areas receive more manpower than less densely populated neighborhoods. Second, high calls for service districts are assigned more manpower than other districts. Investigators are assigned on the basis of crime rates and the severity of crime. In addition, the type of crime is an important consideration in distributing investigators. Vice, liquor law violations, and organized crime are top investigatory priorities.

In Houston, patrol manpower allocations are made on the basis of crime rates and calls for service. Since crime rates and calls for service are higher in black and low-income neighborhoods, these areas receive a larger share of available manpower.

In all five cities, each district is assigned a minimum level of patrol strength. Territory and population, therefore, are important factors in distributional decisions. Beyond these minimum standards, however, manpower assignments are determined by the variation in calls for service and crime rates among districts. Demand for services and need for services affect who gets what. The rules used to allocate patrol manpower are similar in Rochester, Richmond, Boston, Houston, and Charlotte. Charlotte, Richmond, and Boston also rely on the same rule (crime rates and severity of crime) to assign criminal investigators. For some crimes (murder and rape), Rochester assigns investigators from a central investigations unit. Other offenses, however, are handled by personnel assigned to each district. Each of the seven districts in the city receives eight investigators. In Rochester, therefore, need (crime) as equity is modified by equality (population and territory) as equity.

If decision rules did not have distributional consequences, they would deserve less attention. That rules do affect who gets what is best illustrated by analyzing the operation of actual rules.

In Rochester, Richmond, Boston, Houston, and Charlotte, the rules employed to distribute services are limited to resources (manpower and investigators) and activities (response time). In each city, response times to calls for service are determined by the nature of the call. That is, reports of serious incidents receive top priority. Police officials also maintain that an effort is made to achieve equal response times among districts. A burglary report in a wealthy district will not receive a more rapid response than a burglary report in a poor district. With one exception, response time data are not collected and analyzed. There is no way to determine whether responsiveness to citizen requests for police assistance is equally distributed among districts in these cities. In Boston, however, response times to citizen requests for police assistance are gathered and analyzed on a district by district basis.

The decision rules used to allocate police services in Rochester, Richmond, Boston, Houston, and Charlotte have distributional consequences. The assignment of patrol manpower is determined by three standards of equity: equality, need, and demand. First, each police district, regardless of demand for services or need for services, receives some manpower. Second, districts that initiate more calls for police assistance receive more patrol officers than districts that make fewer requests. Third, districts with high crime rates are assigned more manpower than areas with a lower level of crime. However, the distribution of manpower in each city is made on the basis of reported rather than actual crime. Victimization data might produce a substantially different pattern of distribution. The decision rules used in these five cities emphasize the distribution of resources. Although it is departmental policy to provide an equal response time to each call for service, response time data are not collected and analyzed on a district by district basis. Consequently, equality of response time may not exist. No effort is made to achieve equality of results or impacts. High crime areas receive more patrol officers and criminal investigators. However, arrest, clearance, and crime rates may still vary widely among districts.

FOOTNOTES

1. Blacks are not less likely to report crime than whites. Nationally, blacks report 45 percent of all their experiences with personal crimes while whites report 44 percent. However, young people are considerably less likely to report crime than older citizens. Youths between the ages of 12-19 reported only 31.5 percent of the personal crimes committed against them in 1973. See Wesley G. Skogan, "Citizen Reporting of Crime: Some National Panel Data," 13 Criminology, (February, 1976), 535-49.

2. An Evaluation of Selected Aspects of Police Services (City of Charlotte, North Carolina: Budget and Evaluation Department, 1976).

3. Kenneth R. Mladenka and Kim Quaile Hill, "A Reexamination of the Etiology of Urban Crime," 13 Criminology (February, 1976), 491-506.

4. Information on the decision rules used in various police departments was gathered by the authors.

CHAPTER 3. METHODOLOGY
FOR ANALYZING URBAN SERVICE DISTRIBUTION

The purpose of this chapter is to present a framework for analyzing urban service distribution. Service analysis should be related to the objectives of each service. The indicators used in analysis also should be related to conceptions of equity, giving these conceptions of equity operational meaning that administrators, other local officials, and citizens can use in judging whether service distribution is appropriate. An essential aspect of the service analysis framework is that it stresses the use of multiple indicators of service characteristics. Single indicators are not adequate to describe any service. A set of indicators always should be selected. Here the service analysis framework is described, with frequent references to its applicability to the distribution of police services. Later in this chapter, the analytical framework is applied to police in greater detail.

Categories of Analysis

The first problem that an analyst confronts is how to measure services. Indicators must be selected. These indicators should be related to the objectives that the service is intended to meet. Services have more than one objective. For example, the objectives of police services are to promote the safety of the community through the deterrence and prevention of crime and the apprehension of offenders and to provide service in a prompt and courteous fashion. Indicators that are relevant to measuring safety and apprehension will not adequately measure whether police services are provided promptly and courteously. Therefore, different indicators are needed to measure different objectives.

A service delivery framework should be used to help identify specific indicators for police services. The framework proposed here has several uses. It directs attention to several stages of the service process. It forces the analyst to consider the consequences of the service. It stresses performance, in addition to encompassing workload measures. Use of it leads to indicators that can be related to alternative conceptions of equity.

For every urban service, resources are required. In systems model terms, resources commonly are referred to as inputs. The service delivery framework is diagrammed in Figure 1. Examples of types of service indicators are shown in Table 1. Resources are money, personnel, facilities, and equipment. A useful measure of resources often is expenditures. For police services, manpower indicators are

FIGURE 1. Service Analysis Framework

Each service has objectives

involving

Serving population and influencing social conditions

by using

Resources

(expenditures, personnel, facilities, equipment)

and engaging in

Activities

(time frequency and duration)

having

Results

(direct consequences--intended and unintended--
and especially use of services--amount, rate,
and reasons)

and leading to

Impacts

(changes in social conditions)

TABLE 1. Examples of Service Indicators

Data for specific indicators and impacts of resources, activities, results are obtained by gathering field data about services and facilities and by conducting surveys of citizens.

Resources	Expenditures ($ per 1,000 population or 100 households, $ per phenomenon, such as $ per serious crimes)
	Personnel (number per 1,000 population, number per phenomenon, such as number per serious crimes)
	Equipment (patrol vehicles per 1000 serious crimes)
Activities	Frequency (intervals between the appearance on a block of police on routine patrol)
	Duration (response time for police from receipt of call for service to arrival on scene)
Results	Intended consequences (arrests per 100 serious crimes reported)
	Unintended consequences (complaints about unnecessary use of force per 100 arrests for serious crimes)
	Use of services by amount (number of calls for service per week)
	Use of services by rate (number of calls for service per week per population in service area)
	Use of services by reasons (percentage of persons not calling the police for assistance because they believe the police would take too long to respond to the call for service)
Impacts	Changes in social conditions (partially identifiable using experimentation or elaborate and complex calculations)

especially important. How many patrolmen are there per 1,000 population, per 100 total crimes, per 100 serious crimes?

The activities of the urban service system are the ways in which the resources are used. Policemen patrol streets and respond to calls for service. Activities are sometimes referred to as processes in systems model terms. Activities are more difficult to measure than are resources. They involve motion, change, action. They do not stand still. A sound camera can record how a policeman makes an arrest. An analyst working from police records may be able to do no better than identify the response time (the time from the moment the request for service was received until the moment the police arrived at the scene). Sometimes, even response time may not be available. The analyst may be required to rely on frequency and duration measures. For example, how many hours are devoted to responding to calls for police service in a particular district? How frequently is a street patrolled during an 8 p.m. to 4 a.m. shift?

Results are what happens as a direct consequence of activities of the service delivery system. Result indicators are essential in measuring the extent to which service objectives are being achieved. How much stolen property has been recovered? How many people are satisfied with police response time to citizen calls for assistance? These measure results of the service. It is important to note that results are not always intended. Objectives usually are not achieved completely. Some cases may be cleared by arrest, but the persons arrested may sue occasionally for false arrest and win. Thus, analysts should try to include indicators of unintended, as well as of intended, consequences.

It also is important to note that consequences often are not solely, perhaps not even primarily, a result of the effectiveness of the service system. Some patrol districts may have a higher crime rate because the population has high levels of poverty and unemployment. These causal relationships, of course, should be taken into account when remedial action is considered.

The impact of a service can be defined as the difference between results given the existence of the service and the conditions that would exist in the absence of the service. This difference is very difficult to identify. What would the crime rate be if there were no police? How would property values change if there was no public police protection?

When one talks about the contrast between the presence and absence of a service, the impact of the service probably is great, although estimating the impact accurately is difficult. What is the impact on the crime rate of a 5 percent increase in the police force? How many people will change their decision about where to live because of a 5 percent increase in police expenditures? An uncommon wizardry is needed to divine accurate answers to these puzzles.

The best way of identifying service impacts and service results is by experimentation. Experimentation involves comparison between two or more situations differing, ideally, only in the procedure that is applied to them. The difference might be increasing police patrol in one district and decreasing it in another. Measurements are taken of relevant indicators before the experiment, preferably several times over a substantial period, and after the introduction of the new procedure, again preferably several times. The aim of the experiment is to identify differences in the measurement findings and to be able to relate these differences to the change in the experimental conditions. Isolating differences is difficult in the real world, because two or more situations never are identical in all respects other than the experimental variables. Nor do situations hold still. As time passes, conditions change, other than the experimental conditions. Therefore, identifying the new procedure as the cause of the changes measured cannot be done with certainty.[1] Isolating effects is much more difficult with impacts than with results, since social conditions can be influenced by so many variables other than those that are service-related. Because of the difficulty of measuring service impacts, service distribution analysis should rely on indicators of resources, activities, and results.

Citizen Surveys

Surveys of citizens may be used to obtain information about the results of services. Opinions may be the best information available about some results of services. Information about use may be obtained in surveys. People can be asked how often they have contacted the police for assistance. These findings can be used to supplement the information contained in police department records.

People also can be asked for their general opinion about services. Opinions of citizens can be an indirect result of service characteristics. We use the term indirect result because a number of forces may influence opinions about services. These include feelings of trust in government, confidence about being treated fairly, and attitudes toward authority. Administrators may believe police services are being delivered effectively, based on performance indicators such as those referred to earlier. Residents may have a different opinion. Opinions may not be the same in all parts of the jurisdiction. Opinions may be consistent with the performance measures, or they may be inconsistent. Sometimes administratively useful information may be obtained. Such information may be useful in making decisions about priorities among different services, about where to invest resources geographically, and about how to modify public information programs. However, when opinion data differ from other data about resources, activities, and results, the objective non-opinion data should be emphasized in making decisions.

Opinion indicators also need interpretation. Suppose, for example, that resident satisfaction with police is much lower in one neighborhood than in other neighborhoods. How should this be interpreted, if the indicators of resources and results seem to describe a service pattern contrary to the residents' opinions? One explanation could be that their expectations are higher than those of people in other neighborhoods. Therefore, they are less satisfied even though they receive better services. Another interpretation could be that they are disaffected from government. In general, they expect to receive inferior services. Therefore, they conclude that whatever level of service they receive must be inferior to services received elsewhere. What action should be taken? The problem may be more one of public relations than of service delivery. It could be approached in that way. This possible pattern of findings also suggests that opinion measures used in isolation from performance measures have the potential of leading to questionable conclusions.

Operationalizing Conceptions of Equity

Equity concepts should be related to categories of indicators (resources, activities, and results) for analyzing service distribution patterns. Service distribution refers here to the geographic pattern. Equity concepts often apply to individuals. Analytical methods may describe services distributed to individuals. In practice, however, police services are delivered to areas and to those who request services. Therefore, geographic analysis is the only practical way of analyzing police services. Considerations of cost reinforce the practicality of geographic analysis. Indicators of need, such as income data, can be used to supplement population, household, age, and racial data for describing geographic areas. Techniques for describing geographic areas for analytic purposes are discussed later in this chapter.

Earlier, five conceptions of equity were described briefly.[2] These are equity based on equality, need, demand, preference, and willingness-to-pay. The categories of analysis (resources, activities, and results) described here can be used to give concrete meaning to these equity concepts. The importance of making equity concepts concrete can be illustrated with equity as equality. Equity as equality could mean that equal resources per capita should be provided. For police, it could mean that patrolmen should be distributed so that each neighborhood receives the same number of patrolmen per 1,000 residents. Equity as equality also could mean that equal activities per capita should be provided. For police, it could mean that response time should be approximately equal in each neighborhood. Equity as equality also could mean that equal results per capita should be provided. For police, it could mean that clearance rates for burglaries and robberies are equal, or within a small range of variation, in each police precinct. There are a number of indicators of resources, activities, and results that can be used to analyze police services. Each equity concept (equality, need, demand, preference, and willingness-to-pay) needs to be operationalized in terms of these analytical categories.

These categories of indicators provide a means for administrators to compare their concepts of equity with the service distribution pattern as it exists. Analysis and interpretation of these indicators can be included in the decision-making process as changes in departmental procedure, programs, operating budgets, and capital expenditures are considered.

Indicators of Service Distribution

Measurement indicators are needed in order to determine how police services are distributed. The indicators of resources, activities, and results and impacts can then be compared across districts. These comparisons can be used by public officials to trace the implications of the decision rules employed to distribute services and to determine the conception of equity implicitly embodied in the rule. Analysis of service indicators on a comparative basis can also provide information on who is getting what and how the existing pattern can be changed to achieve a more equitable distribution of police services. Table 2 presents indicators of service distribution for resources, activities, results, and impacts.

TABLE 2. Police Service Indicators

Indicators by Measurement Category	Data Source
Resources	
(1) Number of patrolmen and investigators per 1,000 residents/districts and beats.	Department records
(2) Number of patrolmen and investigators per 100 total reported and actual crimes/districts and beats.	Department records
(3) Number of patrolmen and investigators per 100 reported and actual Serious Personal and Property (Part I) crimes/districts and beats.	Department records
(4) Number of patrolmen and investigators per 100 total calls for service/districts and beats.	Department records
Activities	
(1) Mean police response time to all calls for service/districts and beats.	Department records
(2) Mean police response time to each category of calls for service (burglaries, robberies, theft, requests for information, assault, suspicious person)/districts and beats.	Department records
(3) Percent of police response times greater than X number of minutes for each category of calls for service/districts and beats.	Department records

Results

(1) Number of arrests per 100 total crimes, actual and reported/districts and beats.	Department records
(2) Number of arrests per 100 Serious Personal and Property crimes, actual and reported/districts and beats.	Department records
(3) Number of cases cleared per 100 total crimes, actual and reported/districts and beats.	Department records
(4) Number of cases cleared per 100 Serious Personal and Property crimes, actual and reported/districts and beats.	Department records
(5) Percentage of stolen property (dollar value) subsequently recovered/districts and beats.	Department records

Impacts

(1) Number of total reported and actual crimes per 1,000 residents/districts and beats.	Department records, victimization survey
(2) Number of reported and actual Serious Personal and Property crimes per 1,000 residents/districts and beats.	Department records, victimization survey

Seven service indicators are suggested here--numbers of patrolmen, numbers of investigators, response time, arrest rates, clearance rates, percentage of stolen property recovered, and crime rates. Police departments routinely collect these data, with the exception, in many instances, of response time. However, these data often are not analyzed in terms of geographic comparisons within the jurisdiction. Each of these data items is fundamental to understanding the service distribution pattern. If resources do not permit gathering each, then response time should be the first to be dropped.

Discussion of the Indicators

Many of the indicators of resources, activities, results, and impacts listed in Table 2 are available in police department records. However, data on the actual rate of crime will require victimization surveys. In many cities, police analysts will not have sufficient time or resources to gather information on all of the indicators of resources, activities, results, and impacts presented in Table 2. For example, data on the actual incidence of crime will require that surveys be conducted on a periodic basis. In many cities, the costs may be prohibitive. However, distributional analysis can rely on indicators that are less expensive to gather and analyze.

At a minimum, data should be collected on the number of patrolmen and investigators per 1,000 residents, per 100 reported crimes (by type) and per 100 calls for service. For activities, information should be gathered on mean police response time to calls for service, the percent of response times greater than X number of minutes (for each category of call), and the number of calls for service per 1,000 residents. For results, essential indicators are number of arrests and clearances per 100 crimes (by type) and percent of stolen property (dollar value) recovered. Essential impact indicators are the number of crimes (by type) per 1,000 residents.

Distributional analysis can assist public officials in making decisions about police department operations. In order to aid in decision-making, comparisons of indicators should be made across police districts and beats. These comparative data can be used by public officials to ascertain the consequences of the decision rules employed to distribute police services. For example, distributional information collected and analyzed across police districts can be used to provide answers to the following questions:

1. If police manpower (patrol officers and investigators) is assigned on the basis of equality (equal number per 1,000 residents, per district, per square mile), what are the consequences of this decision rule? That is, how many more patrolmen would some districts receive if crime rates were used to allocate manpower?

2. If police manpower is assigned on the basis of demand (per number of calls for service), what are the distributional consequences? Do some districts generate more calls for service per 1,000 residents? Do high calls for service districts differ from low calls for service districts on the basis of race, wealth, and the number of crimes per 1,000 residents?

3. If manpower is assigned on the basis of need (crime rates), what are the distributional consequences? If crime rates determine resource distributions, are total crimes or the number of Serious Personal and Property crimes used as the measure of crime rates? Does the geographic distribution of total crimes differ from the distribution of serious crimes? If total crimes are used to assign manpower, how would the manpower pattern differ if serious crime rates were employed to allocate resources? Would same districts receive more manpower? Would others receive less?

4. If victimization surveys are used to supplement reported crime data, what percentage of crimes (by category) are reported to the police? Do some districts report a smaller percentage of crimes than others? Do these districts differ on the basis of race and wealth? Would some districts receive more manpower than they now receive if victimization data rather than reported crimes were used to distribute manpower?

5. If manpower is assigned on the basis of calls for service and crime rates, how important are each of these factors? If District A ranks first in number of calls for service and third in crimes per 1,000 residents, while District B ranks first in crimes per 1,000 residents but third in number of calls for service, what percentage of available manpower does each district receive?

6. How frequently are calls for service and crime data updated for districts and beats? Weekly, monthly, annually? How frequently is manpower reallocated on the basis of changes among districts in the number of calls for service and crime rates?

7. Are arrest and clearance rates equal among districts? What is the variation?

8. Are response times to each category of calls for service equal among districts? What procedures are used by the police department to ensure that response times are equally distributed among districts? Do some districts receive a slower response than others? Why?

9. Do some districts exhibit higher arrest and clearance rates per 100 crimes (by category of crime) than other districts? Why?

10. Is the percentage of stolen property eventually recovered (dollar value) reasonably equal among districts? Why?

Distributional analysis can provide answers to these questions. Distributional information on a geographic basis can be used to determine whether police services are equitably distributed. Examination of the distributional pattern may reveal that manpower is allocated on the basis of crime rates and calls for service and that high crime districts also generate more calls for service. Victimization data may reveal that the distribution of actual crimes differs from the geographic incidence of reported crimes. Districts with a high rate of reported crimes may not have the highest rate of actual crimes. Therefore, allocation of manpower on the basis of actual crimes would produce a distributional pattern that differs from assigning patrol officers and investigators on the basis of reported crimes.

Distributional information can also be used to interpret data on citizen opinions about police performance and conduct. Attitudes about police services may be influenced by factors other than the quality of police services. For example, negative opinions may be a function of cynicism toward government, attitudes toward authority, and unrealistic expectations about what the police can reasonably achieve in terms of crime control and reduction.

However, dissatisfaction with police services may be justified if one district, in comparison with other districts, has:

(1) A higher crime rate but an equal number of patrol officers and investigators.

(2) A lower arrest and clearance rate per 100 crimes.

(3) Patrol officers who initiate fewer crime prevention contacts with residents.

(4) Patrol officers who are able to spend less time on active patrol.

Data on the distribution of resources and activities, in conjunction with information on citizen attitudes, can be used to pinpoint police districts that may be receiving inferior services. Analysis may reveal that the decision rules employed to distribute services should be changed in order to achieve a more equitable pattern of service distribution.

Geographic Analysis

In order to be useful, police service indicators should be collected and analyzed on a geographic basis. Geographic analysis requires service areas. Police districts, beats, or precincts can be used for this purpose. The indicators of police services can be standardized on the basis of population for each service area (districts, beats, precincts). The characteristics of the population (race, income) can then be related to the service indicators and comparisons can be made across service areas. The relationships among resources, activities, and results for different service areas can be analyzed.

Two geographic units can be used in establishing service areas for police services. These are the census tract and the census block. The primary advantage of using tracts and blocks is that tract and block boundaries and data are readily available. However, the use of these geographic units requires careful attention to several problems. First, census tracts may not be homogeneous in terms of density, race, and income. One part of the tract may be white, middle-class, and sparsely populated while another part may be black, poor, and densely populated. Since blocks are much smaller geographic units than tracts, block data should be compared with tract data in order to determine the degree to which the population within the service area varies on the basis of race and income.

Suppose that the public official wants to know if black areas receive the same number of patrolmen per 100 reported crimes as white neighborhoods. If part of a police district is predominately black while another part is predominately white, the analyst's ability to compare districts that differ on the basis of race in regard to resource distribution will be impaired. Homogeneous service areas permit the public official to determine whether black neighborhoods receive more or fewer resources than white neighborhoods. Heterogeneous service areas do not.

A second problem associated with the use of census data is that this information may be outdated. Population shifts may produce a change in the characteristics of the population residing within tract boundaries. This problem is considerably less severe in those cities where tract information is updated on a periodic basis.

A third problem is encountered when service areas (districts, beats, precincts) split service areas. For example, suppose that a police district includes two entire census tracts and parts of several others. Since tract data are available only for the entire tract, split tracts present a problem for the analyst. This problem can be dealt with in two ways. First, an estimate can be made of the population for that portion of a tract included in the service area. If the total tract population is 8,000 and if one-fourth of the tract is included, it is estimated that 2,000 persons live in the split portion.

This procedure assumes that the tract population is uniformly distributed and that the characteristics of the population (race, income) are evenly distributed as well. Given these assumptions, the aggregate population characteristics available for the entire tract can be used for the tract portion. If the tract is 30 percent black and has a median family income of $8,500, it is assumed that the portion of the tract population included in the service area exhibits these same characteristics. However, these assumptions may not be valid. If the population is not evenly distributed and/or homogeneous in terms of race and income, these estimations will be misleading.[3]

The alternative procedure is to use block data. Each census tract is divided into a number of block units. In those instances where the boundaries of a police district split tracts, block data can be used to give a more accurate indication of the size and characteristics of the population than that obtained through the estimation procedure.

There are disadvantages associated with the use of block data. They are cumbersome and time-consuming to work with. A very large number of overlays and calculations are required to accurately match blocks with a portion of a tract. Data are sometimes missing for individual blocks. Missing data again require that estimations be made. Block information is limited to population, number of blacks, and median value of owner occupied housing units. Data on income and poverty levels are not available.

When service areas split census tracts, the choice between an estimation procedure and the use of block data is, in part, a choice between ease of measurement and richness and detail of information (for tracts) on the one hand, and precision of measurement (for blocks) on the other. If resources permit, both procedures should be used. In this way, the margin of error associated with the use of the tract estimation technique can be determined. If the margin of error is acceptable, analysts will be able to take advantage of the richness of data available for tracts. If the margin of error is unacceptable, block data will be required.

FOOTNOTES

1. Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research, (Chicago: Rand McNally & Co. 1963); Harry P. Hatry, Richard E. Winnie, and Donald M. Fisk, Practical Program Evaluation for State and Local Government Officials, (Washington, D.C.: The Urban Institute, 1973); Carol H. Weiss, Evaluation Research, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972).

2. These five conceptions of equity are discussed extensively in Chapter 2 of William H. Lucy and Kenneth R. Mladenka, Equity and Urban Service Distribution, (Washington, D.C.: National Training and Development Service, 1978).

3. One study found that the margin of error involved in these estimations was only 10 percent. See Donald M. Fisk, Harry P. Hatry, Kathleen Hudak, Kenneth Webb, and Robert Fiore, How Effective Are Your Community Recreation Services? (The Urban Institute: Washington, D.C., 1973).

CHAPTER 4. MANAGEMENT STRATEGIES

What should be done with the concepts of equity and decision rules and the methods of distributional analysis? Why are they important? Who should use them and how should they be used? These questions have been addressed to some extent in preceding chapters. Here we will examine them, stressing the action contexts in which decisions should be made. This final chapter will be organized to cover the following topics:

How can distributional analysis be used in setting goals?

What decision-making sequence should city managers and mayors engage in to evaluate the equity of service distribution in their communities?

How can decision rules and service indicators be selected to facilitate implementation of equity concepts for police services?

Setting Goals

Establishing goals is one of the most difficult tasks that government administrators face. One occasion when this difficulty becomes apparent is when administrators try to analyze the effectiveness of public services. Even if indicators of effectiveness can be agreed upon, the problem of how much of a particular indicator is a sign of satisfactory performance is perplexing. How many arrests per 100 crimes reported are enough? How fast should police response time be? Reference to standards set outside the community may be helpful in answering these questions. But reference to standards determined inside the community is essential. One basis for establishing standards is an equity and service distribution perspective. Public officials should decide the extent to which services should move toward, or away from, equal distribution among neighborhoods. If there is to be variation among neighborhoods, how much should there be? Why should variation be tolerated, accepted, or sought?

General distributional goals can be established without systematic data analysis. But specific goals should be based on analysis of the distribution pattern. Public officials should determine who is getting how much of what. They should decide whether the variation that exists is acceptable or not and then set goals for reducing the variation or for perpetuating it. Is a 50 percent variation in arrest rates among police districts acceptable? What should be done to reduce it? Is a 25 percent variation in police response time acceptable?

Goals of this type are useful in a system of management by objectives. If a management by objectives system is going to be useful, objectives need to be established in terms that lend themselves to identifying policies and procedures that will help achieve the objectives. Evaluation of effectiveness in achieving distributional objectives also is feasible. Gathering and analysis of data to describe the service distribution pattern, establishing management objectives, and evaluating effectiveness in achieving objectives are parts of a management strategy.

It is not sufficient to declare that the goal of the police department is to reduce crime. This goal is of little value because it does not permit the public official to answer the following questions:

1. Do some neighborhoods receive more police services than other neighborhoods?

2. Do the poor receive more than the rich? Do whites receive more than blacks.

3. If some neighborhoods receive more police services than other neighborhoods, is this pattern justified? Why?

4. Does an increase in crime disproportionately burden some neighborhoods? Does a decrease disproportionately benefit other neighborhoods?

5. Do all citizens have an equal opportunity to take advantage of police services?

6. Are police services distributed on the basis of equality (resources, activities, results), need or demand? Why? Is this pattern equitable?

7. Should a budget increase for police be spent to hire more investigators or to provide more patrolmen to handle routine calls for assistance?

Distributional analysis of service patterns can help provide answers to these and many other questions. The information can be used to guide budget preparations and to make changes in departmental operations.

Although the data gathering process will be most efficient if data are gathered to serve several purposes, in some instances administrators may gather data solely to analyze service distribution equity. What should trigger this decision. When should administrators decide to gather and analyze data for the purpose of evaluating service equity?

The most important situations in which administrators should gather and analyze data to evaluate the equity of service distribution are:

1. When they believe that an important aspect of police services may be distributed in ways which they consider inequitable, but they are not sufficiently confident of their position.

2. When they believe there is a reasonable chance that a change can be brought about, if their beliefs about service inequities prove to be accurate.

3. When a substantial number of complaints have been made about allegedly inequitable service delivery.

4. When they believe one or more neighborhoods may be the victims of many inequities in service distribution.

When any of these four conditions exist, administrators should consider having data about the relevant aspects of service distribution gathered and analyzed. Data analysis decisions should be based on the following considerations:

1. Which data items are most directly focused on resolving the beliefs of administrators about possible police service inequities.

2. Which data items can be gathered at least cost.

3. Which data items will aid the most in meeting related policy-making needs, such as needs for capital programming, evaluation of service effectiveness, and management by objectives.

Decision-Making Sequence

When an administrator wants to involve himself in distributional issues, he must do so in a sequence of actions. While sequences will vary some from situation to situation, the steps described below are a reasonable sequence to follow.

1. Determine the decision rules that are used to distribute the service.

    a. Obtain written statements from police department officials detailing the decision rules that are used.
    Example: Police patrol officers are deployed so that at least 90 percent of the time a patrol car is available to respond to calls for service.

    b. If a particular aspect of service distribution is influenced by more than one decision rule, then obtain a statement from department officials in which they rank the rules that influence the decision in the order of their importance.
    Example: The first decision rule in assigning patrol manpower is to give priority to areas with high rates

of reported crime. The second decision rule is to give priority to those areas eligible on the first criteria where the level of calls for police assistance is high.

c. Obtain supplementary statements, if necessary, explaining why and under what circumstances other factors may influence decisions or circumstances when the rank order of decision rules may be different.
Example: Some police districts include a large territory and are sparsely populated. In this case, more patrol manpower will be assigned to adequately patrol the area than if crime rates and calls for service alone were employed to distribute manpower.

2. Evaluate the implications of using these decision rules.

a. What conception, or conceptions, of equity do the decision rules reflect?
Example: The decision rule about deploying police patrol officers so that a patrol car is available for response to 90 percent or more of requests for service reflects a demand concept of equity. The emphasis is on response to all calls, rather than establishing priorities.

b. Estimate who tends to benefit from the use of these decision rules based on:
--General tendencies that the use of this conception of equity has, drawing on the discussion in Chapter 2 about the implications of equity concepts.
Example: If police patrol officers are distributed based on FBI index crime rates, one can expect that more police will be assigned to low income areas because crime rates usually are higher there.
--Specific tendencies which seem to apply to the distribution of a particular service in this specific community.
Example: The specific pattern that will occur by basing police patrol officer distribution on FBI index crime rates or calls for service can be determined only by knowing the specific distribution of crime and calls for assistance in a community.

3. Decide whether you disagree with, or doubt the appropriateness of, the decision rules that are used by considering:

a. Which conception or conceptions of equity you believe should generally be applied to police services.

b. Whether the decision rules are consistent with this conception of equity.

c. Whether you believe the consequences of using the decision rules are desirable.

4. If you question the appropriateness of the decision rules, discuss your concerns with your staff and with police department officials. Discuss:

a. Whether your concerns are justified.

b. What additional steps to take, such as adopting new decision rules, identifying decision rules used in other communities, and gathering and analyzing data about service distribution in your community.

5. If you are convinced that changes should be made, adopt revised decision rules after:

a. Deciding which conception of equity should be applied.

b. Deciding what general distribution of benefits is appropriate.

c. Deciding what decision rules would best achieve the distribution sought.

d. Reviewing the implications of the proposed decision rules for total cost, unit cost, service effectiveness, administrative practicality, and political ramifications.

An additional optional step would be to consider the decision rules that are used in other ocmmunities, by referring to the discussion of decision rules in an earlier chapter, and/or by contacting officials in other communities.

Selecting Decision Rules to Implement, and Indicators to Monitor, Equity Concepts for Police Services

The discussion of a suggested decision-making sequence makes clear the value of carefully integrating use of equity concepts, decision rules, and service indicators. The value of this approach can be illustrated in another way. Suppose that the equity concepts one wishes to apply to an aspect of police services have been selected. Decision rules to implement those equity concepts then can be identified. The indicators of service distribution that will facilitate judgments about the appropriateness of the implementation of the equity concept also are rather readily discerned. An example will illustrate.

Let us say that police services will be distributed on the basis of the equity concepts of need and demand. What decision rules will implement both of these equity concepts in a reasonable way? Though not the only possibilities, the following decision rules would be reasonable ones to use in implementing these two equity concepts.

1. Distribute police patrol officers roughly in proportion to crime rates for FBI index crimes (need).

2. Respond to all calls for service (demand).

3. Distribute investigators roughly in proportion to FBI index crime rates, or, when available, distribute investigators in proportion to FBI index victimization rates (need).

These three decision rules probably are the most important influences on the distribution of police services. They provide that demands (requests for service) will be responded to, but they provide more police services per capita in high crime (need) areas. Investigators are supposed to develop evidence sufficient to make arrests. These personnel would be distributed in proportion to reported crime rates, or, if available, in proportion to actual victimization rates.

The following indicators of resources, activities,and results would enable public officials to determine whether the equity concepts of need and demand are being implemented.

1. Police patrol officers per 100 annual FBI index crimes per service district (resource indicator).

2. Investigators per 100 annual FBI index crimes per service district (resource indicator).

3. Average response time per service district and range of response times by percent distributions per service district (activity indicators).

4. Arrest rates for FBI index crimes per service district (result indicator).

5. Complaints about response time and response quality per service district (result indicator).

These five indicators would enable administrators to determine how patrol officer and investigator distribution corresponded to crime rates, and, if available, victimization rates (need). From the response time and complaint data, one can evaluate whether calls are being responded to rapidly enough (demand). From the arrest rate data, one can evaluate whether the quality of police work and the results of that police work are proportionate to the crime rates (need). Thus, the data enable administrators to assess whether the equity concepts of need and demand are being implemented in ways they believe to be appropriate. Administrators will need to decide how much variation among service districts is acceptable. There is no formula for this judgment. National professional organizations have not proposed guidelines.

The point is that once the subject of concern is clearly identified, such as how to distribute police patrol manpower, the data useful for making that decision also can be identified clearly. The linkages between concepts of equity, decision rules, and indicators of service can be identified by careful thought and systematic attention. What looks like a complex, even esoteric subject when examined abstractly, becomes readily manageable when specific decisions are confronted.

A Final Word

Why bother with evaluating the equity of urban service distribution?

The distribution of services is the principal determinant of who receives the benefits of local government activities. That is ample reason to analyze and evaluate service distribution.

Generalist administrators have additional reasons to be concerned. City managers, mayors, budgeters, and planners often have only a modest role in influencing important aspects of service distribution. Generalists should have a larger role. They need to know what operating departments are doing, why they are doing it, and what the consequences of departmental decisions are.

Obtaining more information is one method of increasing influence and control. Other steps are helpful. Equity concepts snould be understood. The purpose of the methodological framework for selecting indicators needs to be grasped.

Decision rules constitute the heart of the process of influence and control. Service distribution consequences are determined by decision rules. Administrators who want to evaluate service equity and who want to increase their influence over service distribution consequences should focus their attention on decision rules.